

Subject Code: R16CC2201

II B.Tech II Semester Regular/Supple Examinations, November-2020  
**BUSINESS MANAGEMENT CONCEPTS FOR ENGINEERS**  
(EEE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from **Part-B**  
All questions carry equal marks of 12.

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**PART-A**

1. (a) Define Demand?
- (b) Explain feature of Monopoly market?
- (c) What is meant by GAAP in Accounting?
- (d) Outlay importance of Management
- (e) Write a short note on Human Resource Management
- (f) Compare Job Production and Batch production

[2+2+2+2+2+2]

**PART-B**

4 X 12 = 48

2. Define Managerial Economics and Explain its nature and Scope.
3. Compare and contrast between Monopoly market and Oligopoly market.
4. Journalize the following transactions in the books Mr.Ganesh. Also state the nature of each account involved in the journal entry.
  - a. Jan.01, 2017, Ganesh started business with cash Rs. 90,000.
  - b. Jan.03. Cash deposited into the bank Rs. 6,000.
  - c. Jan .05. Purchased goods for cash Rs. 35,000.
  - d. Jan.08. Sold goods for cash Rs. 9,000.
  - e. Jan.10. purchased furniture and paid by cheque Rs. 72,000.
  - f. Jan.12. Sold goods to Srinivas Rs. 10000.
  - g. Jan.14. Purchased goods from Siva. 20,000.
  - h. Jan.15. Returned goods to Siva. 10,000.
  - i. Jan.16. Received cash from Srinivas Rs. 9960 in full settlement.
  - j. Jan.18. Withdraw goods for personal use Rs. 3,000.
  - k. Jan.20. Withdraw cash from business for personal use Rs. 4,000.
  - l. Jan.24. Paid telephone charges Rs. 4,500.
  - m. Jan 26. Cash paid to Siva in full settlement Rs. 9,900.
  - n. Jan.31. Paid for stationary Rs. 500 rent Rs. 700 and salaries Rs. 8,000.
5. Describe Management functions and extend its importance in organisations.
6. (a) Elaborate ABC analysis (b) Elucidate EOQ analysis
7. List out and explain about Capital budgeting techniques in detail.



Subject Code: R16CE2201

**II B.Tech II Semester Regular & Supple Examinations, November-2020**  
**STRUCTURAL ANALYSIS-I**

(CE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

1. (a) Differentiate between determinate and indeterminate structures?
- (b) Name any four methods used for computation of deflections in structures.
- (c) State Moment Area Theorems.
- (d) Give the equation for a parabolic arch whose springing is at same level and different levels?
- (e) State the principle of virtual work?
- (f) What are the uses of influence line diagrams?

[2+2+2+2+2+2]

**PART-B**

4 X 12 = 48

2. Analyse the pin jointed truss shown in Fig. 1 by method of joints.

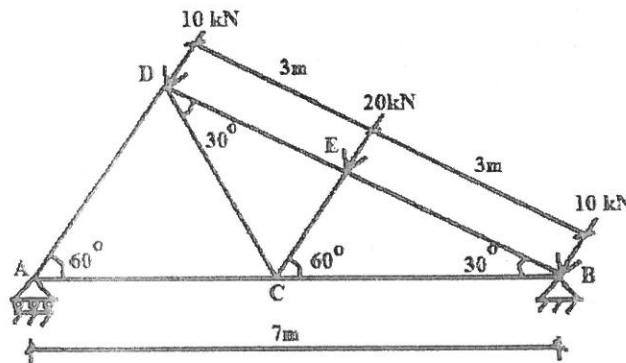


Fig. 1

3. Determine the location of the maximum deflection between A and B, accurate to the nearest 0.01m and find the value of the maximum deflection between A and B, for the following beam. Take  $E = 200 \text{ kN/mm}^2$  and  $I = 8 \times 10^8 \text{ mm}^4$ . Refer Fig. 2. Use Macaulay's method.

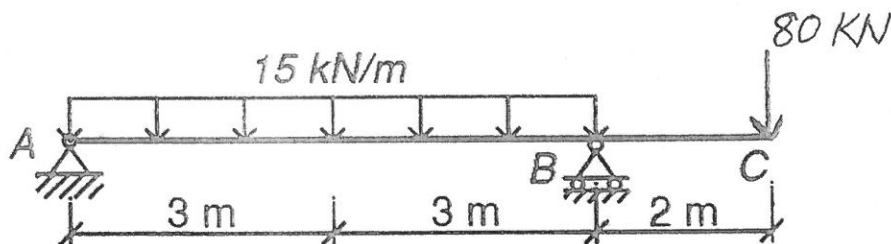


Fig. 2

4. Determine the deflection and rotation at the free end of the cantilever beam shown in Fig. 3 by conjugate beam method.

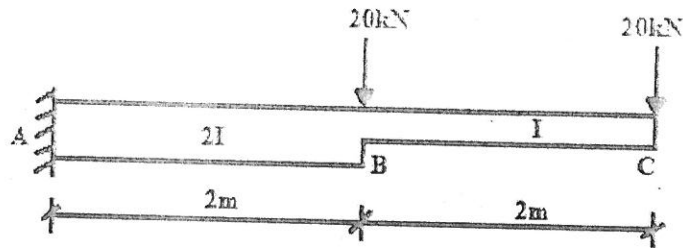


Fig. 3

5. Derive the expression to determine the deflection of a simply supported beam under udl by Castigliano's theorem.
6. A parabolic arch hinged at springing and crown has a span of 20m and a central rise of 4m carries a point load of 6 kN at 6m horizontally from the left side hinge. Calculate the normal thrust, bending moment and shear force at the section under the load.
7. Five equal loads of 20kN each, equally spaced at 1m apart followed by a udl of 25kN/m run at a distance of 2m from the last 20kN load crosses a girder of 15m span from left to right. Using influence lines, calculate the reactions, SF and BM at a section 6.5m from right hand support, when the leading 20kN load is at 4m from this support.

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Subject Code: R16CE2202

II B.Tech II Semester Regular & Supple Examinations, November-2020

HYDRAULICS AND HYDRAULIC MACHINERY

(CE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

[2+2+2+2+2+2]

1. (a) What do you mean by alternate depths?
- (b) If  $L_r$  is the scale ratio for length, what is the scale ratio for discharge in Froude Model?
- (c) State Impulse-Momentum equation
- (d) Differentiate impulse and Reaction turbines.
- (e) What is manometric head of a centrifugal pump?
- (f) What is a pumped storage plant?

**PART-B**

4 X 12 = 48

2. (a) Derive the expression for discharge through open channel by chezy's formula?
- (b) Find the discharge through a trapezoidal channel of width 8m and side slope of 1 horizontal to 3 vertical. The depth of flow of water is 2.4m and value of chezy's constant  $C = 50$ . The slope of the bed of the channel is 1 in 4000.
3. (a) State Buckingham's  $\pi$  theorem.
- (b) The efficiency  $\eta$  of a fan depends on density  $\rho$ , dynamic viscosity  $\mu$  of the fluid, angular velocity  $\omega$ , diameter  $D$  of the rotor and the discharge  $Q$ . Obtain dimensionless terms.
4. (a) Derive an expression for force exerted by a jet on moving plate?
- (b) A jet of water having a velocity of 40 m/s strikes a curved vane, which is moving with a velocity of 20 m/s. the jet makes an angle of  $30^\circ$  with the direction of motion of vane at inlet and leaves at an angle of  $90^\circ$  to the direction of motion of motion of vane at outlet. Draw the velocity triangles at inlet and outlet and determine the vane angles at inlet and outlet so that the water enters and leaves the vane without shock.
5. (a) Explain about Pelton wheel turbine with neat sketch?
- (b) A Pelton wheel has a mean bucket speed of 10 metres per second with a jet of water flowing at the rate of 700 litres under a head of 30 metres. The buckets deflect the jet through an angle of  $160^\circ$ . Calculate the power given by water to the runner and the hydraulic efficiency of the turbine. Assume co-efficient of velocity as 0.98.
6. (a) Explain the main parts of centrifugal pump with a neat sketch?
- (b) The internal and external diameters of the impeller of a centrifugal pump are 200 mm and 400 mm respectively and the pump is running at 1200 rpm. The vane angles of impeller at the inlet and outlet are  $20^\circ$  and  $30^\circ$  respectively. The water enters the impeller radially and velocity of flow is constant. Determine the work done by the impeller per unit weight of water.
7. (a) Write a short note on classification of hydropower plants.
- (b) Define (i) Load Factor (ii) Utilization Factor (iii) Capacity Factor





Subject Code: R16CE2203

II B.Tech II Semester Regular & Supple Examinations, November-2020  
ENGINEERING GEOLOGY  
(CE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

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PART-A

1. (a) Write a note on branches of geology.
- (b) What do you understand by minerals? How minerals are formed?
- (c) Define Strike and dip.
- (d) Write a note on cone of depression.
- (e) List out various Seismic refraction methods.
- (f) Write about Lining of tunnels.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What are geological agents? Explain the weathering process of rock.
- (b) Explain the stages of the development of the river
3. (a) Explain physical properties of rock.
- (b) Write notes on texture and Structures of Sedimentary rocks? Explain with a neat diagram.
4. (a) What is fault? Describe the parts of fault. Attempt the classification of faults in brief
- (b) Explain different types of joints.
5. (a) Explain the process analysing the subsurface using Electric resistivity method
- (b) Explain the classification of geophysical method.
6. (a) What are the geological considerations in the selection of a dam site?
- (b) Explain types and purpose of Dams
7. (a) Describe the factors causing landslide.
- (b) What are the causes of earthquake?

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Subject Code: R16CE2204

**II B.Tech II Semester Regular & Supple Examinations, November-2020**  
**SURVEYING-II**

(CE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

[2+2+2+2+2+2]

1. (a) Define swinging the telescope and transiting the telescope.
- (b) What are the uses of Trigonometrical levelling?
- (c) Why are the curves provided. Explain different types of curves with neat sketches.
- (d) How is gradient expressed?
- (e) What is a sub tense bar?
- (f) What is total station?

**PART-B**

4 X 12 = 48

2. (a) How will you set out a horizontal angle by method of repetition?
- (b) Explain how you would measure, the vertical angle with a theodolite.
3. (a) What are the different errors in theodolite work? How are they eliminated?
- (b) The table below gives the lengths and bearings of the lines of a traverse ABCDEA, the length bearing of EA having been omitted. Calculate the length and bearing of the line EA.

Line	Length (m)	Bearing
AB	204.0	87°30 <sup>0</sup>
BC	226.0	20°20 <sup>0</sup>
CD	187.0	280°0 <sup>0</sup>
DE	192.0	210°30 <sup>0</sup>
EA	?	?

4. (a) Why are the curves provided. Explain different types of curves with neat sketches.
- (b) Two straights intersect at a chainage of 3500.5m with an angle of intersection of 156°. These two straights are to be connected by a simple circular curve of 200m radius. Calculate the data necessary by the method of offsets from the chords produced with a peg interval of 20m
5. Briefly explain about the different types of curves.
6. (a) What is tangential method of tachometry? Explain them briefly?
- (b) The following readings were taken on a vertical stadiometer with a tachometer fitted with an analytic lens:

Staff_ station	Bearing	Vertical angle	Stadia reading
A	34°20 <sup>0</sup>	+11 <sup>0</sup>	0.850 1.410 1.970
B	202°50 <sup>0</sup>	-4 <sup>0</sup>	0.755 1.885 3.015

The value of k for the instrument is 100, calculate the difference of level between A and B and the distance AB.?

7. (a) Explain the methods of locating soundings?
- (b) What are the salient features of a total station surveying explain them briefly?



Subject Code: R16CE2205

II B.Tech II Semester Regular & Supple Examinations, November 2020

HYDROLOGY AND IRRIGATION ENGINEERING

(CE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

[2+2+2+2+2+2]

1. (a) What is Hyetograph?
- (b) Write Horton's equation for rate of infiltration.
- (c) Define unit hydrograph
- (d) What is infiltration gallery?
- (e) Define Field Capacity of soil.
- (f) What is a side slope canal?

**PART-B**

4 X 12 = 48

2. (a) Explain the various types of precipitations.
- (b) Describe the working of a syphon type rain gauge with a neat sketch.
3. (a) Define evapo-transpiration. Describe any one method of measuring evapotranspiration.
- (b) List the factors affecting runoff and draw a typical flow duration curve.
4. (a) Given below are the observed flows from a storm of 4-h duration on a stream with a drainage area of 1600 km<sup>2</sup>. Derive and plot the 4-h unit hydrograph assuming a constant base flow of 100 m<sup>3</sup>/s.

Time (day)	Flow (m <sup>3</sup> /s)	Time (day)	Flow (m <sup>3</sup> /s)
1	100	8	280
2	1000	9	218
3	830	10	180
4	630	11	155
5	520	12	130
6	420	13	110
7	350	14	100

- (b) Explain any three methods of estimating floods.
5. (a) What is the necessity of irrigation to crops? Write the advantages and disadvantages of irrigation.
- (b) Write short note on (i) Gravity irrigation (ii) Lift irrigation (iii) Sewage irrigation
6. (a) Explain the following terms. (i) Delta (ii) Kor-period (iii) Application efficiency
- (b) Determine the frequency of irrigation for the following data.  
 Field capacity of soil = 30%, Permanent wilting point = 10%  
 Root zone depth = 0.75 m, Consumptive use = 12 mm/day  
 Relative density of soil = 1.6, Optimum moisture content = 16%
7. (a) Explain (i) Balancing depth (ii) Lacey's True regime conditions (iii) Critical velocity ratio
- (b) Obtain the dimensions of a trapezoidal canal of side slopes 0.5 H: 1V carrying a discharge of 40 m<sup>3</sup>/s. Assume Lacey's silt factor as unity.





Subject Code: R16EE2202

**II B.Tech II Semester Regular & Supple Examinations, November-2020**  
**DIGITAL ELECTRONICS**  
**(EEE)**

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.  
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from **Part-B**  
All questions carry equal marks of 12.

**PART-A**

1. (a) Explain excess-3 code.
- (b) State De-Morgan's Theorems.
- (c) What is advantage of Carry look ahead adder.
- (d) Explain PAL.
- (e) What are different modes of triggering.
- (f) Difference between Synchronous and Asynchronous Counters.

[2+2+2+2+2+2]

**PART-B**

2. (a) Covert  $(456)_8$  into decimal, binary and hexa number system number. (6 M)
- (b) Realize  $X = B^1DE^1 + A^1BE + B^1C^1E^1 + A^1BC^1D^1$  using logic gates. (6 M)
3. (a) Minimize and implement the following Boolean function using NOR gates. (6 M)  
 $F(w,x,y,z) = \sum(1, 2, 5, 8, 6, 10, 12, 14)$
- (b) Simplify below Boolean function and implement using NAND gates. (6M)  
 $F(w,x,y,z) = \pi(1, 3, 6, 9, 10, 11, 12, 14)$
4. (a) Implement the following Boolean function with a decoder and external gates  $F(w,x,y,z) = \sum(1, 3, 4, 11, 13, 14, 15)$  (6 M)
- (b) Draw and explain four-bit magnitude comparator. (6 M)
5. (a) Implement  $F(w,x,y,z) = \sum(0, 1, 4, 6, 7, 10, 11, 13, 15)$  using PLA and explain its procedure. (6 M)
- (b) Compare PROM, PLA and PAL. (6 M)
6. (a) Explain SR and JK flops with logic diagrams. (6 M)
- (b) Covert SR flip flop into D flip flop. (6 M)
7. (a) Implement 4 bit synchronous counter with J-K flip flops. (6 M)
- (b) Explain Modulo-N counter with example. (6 M)

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Subject Code: R16EE2203

II B.Tech II Semester Regular & Supple Examinations, November-2020

CONTROL SYSTEMS

(EEE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

1. (a) Give classification of control systems. (2 M)
  - (b) What is proportional controller and what are its advantages? (2 M)
  - (c) What is the necessary and sufficient condition for stability in Routh's stability criterion? (2 M)
  - (d) Define Gain margin and Phase margin. (2 M)
  - (e) Draw the pole zero location of lag compensator. (2 M)
  - (f) What are the advantages of state space analysis over transfer function analysis? (2 M)
- [2+2+2+2+2+2]

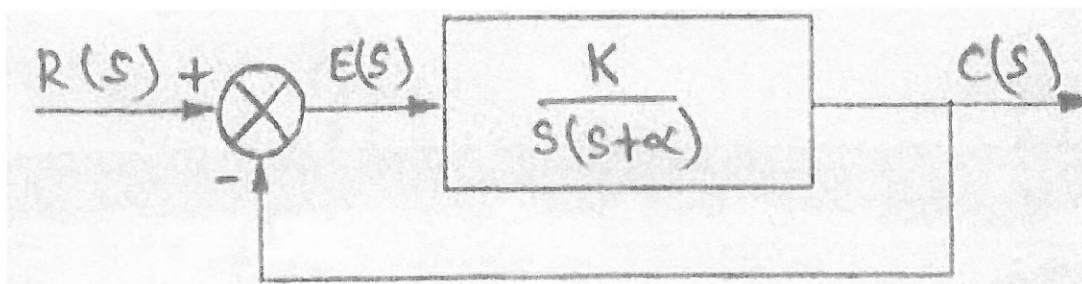
**PART-B**

4 X 12 = 48

2. (a) Discuss the characteristics of feedback in closed loop control system. (6 M)
- (b) Define the Impulse response of the system. Also find the impulse response of the system with open loop transfer function. (6 M)

$$G(S) = \frac{10}{s(s+3)}$$

3. (a) Sketch the time response of the second order system and explain each component briefly. (6 M)
- (b) For the system shown in figure below, find K and  $\alpha$  to yield a settling time of 0.15 second and a 30% overshoot. (6 M)



4. (a) With the help of Routh's stability criterion find the stability of the following system represented by the characteristic equation:  
$$s^4 + 8s^3 + 18s^2 + 16s + 5 = 0. \quad (6 \text{ M})$$
- (b) Define Root locus and explain procedure to sketch the Root-locus for a given transfer function. (6 M)
5. (a) State and explain Nyquist stability criterion. (6 M)
- (b) Explain about frequency domain specifications. (6 M)
6. (a) What is compensator? Explain about lead compensator. (6 M)
- (b) Sketch the bode plot for the following transfer function and determine phase margin and gain margin: (6 M)

$$G(s) = \frac{75(1 + 0.2s)}{s(s^2 + 16s + 100)}$$

7. (a) What is observability? Explain the tests for observability. (6 M)
- (b) What are the properties of state transition matrix? (6 M)

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**Subject Code: R16EE2204**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**  
**POWER GENERATION AND ECONOMIC ASPECTS**  
**(EEE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

**PART-A**

1. (a) What are the advantages of thermal power stations?
- (b) What are the main parts of nuclear reactor?
- (c) Define the term 'load factor'?
- (d) What are the advantages of gas insulated substations?
- (e) What are the disadvantages of underground cables?
- (f) Define distribution systems?

[2+2+2+2+2+2]

**PART-B**

4 X 12 = 48

2. (a) Discuss and compare the performance of different types of boilers used for thermal power plants? [6M]
- (b) Describe with a neat sketch the construction, principle of operation and application of economiser? [6M]
3. (a) Compare the performance of various materials used as moderator in a nuclear reactor?
- (b) Explain the radiation hazards and shielding of a nuclear power station? [6M]
4. Explain the following terms a) Load curve b) Load distribution curve c) Demand factor d) Diversity factor [12M]
5. What are the factors considered when selecting a location for a substation? [12M]
6. (a) Describe with neat sketch the construction of the three core belted type cable. Discuss the limitations of such cable? [6M]
- (b) The capacitance per km of a three phase belted cable is  $0.3 \mu F$  between the two cores with the third core connected to the load sheath. Calculate the charging current taken by 5 km of this cable when connected to a three phase, 50 HZ, 11 KV supply. [6M]
7. (a) Find out the voltage drop expression of a two wire DC distribution with a uniform load being fed at one end. [6M]
- (b) A uniformly loaded DC two wire distributor 500m long is loaded at 3 A/m run. Resistance of the loop is  $0.01 \Omega /km$ . Determine the maximum voltage drop if the distributor is fed as both ends at the same voltage [6M]

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Subject Code: R16EE2205

II B.Tech II Semester Regular & Supple Examinations, November-2020  
ELECTRICAL MACHINES-II

(EEE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

[2+2+2+2+2+2]

1. (a) Draw the phasor diagram of three phase induction motor at standstill condition?
- (b) Define cogging and crawling?
- (c) List any two differences between salient and non salient pole alternators?
- (d) List the tests to be conducted on alternator to predetermine regulation using ZPF method?
- (e) What is synchronous condenser? List any one application?
- (f) Explain the principle of double field revolving theory?

PART-B

4 X 12 = 48

2. (a) Discuss the points of similarities and dissimilarities between a transformer and an induction motor. Hence, explain why an induction machine is called a generalized transformer?
- (b) A three phase, 400 V, 50 Hz induction motor takes a power input of 34 kW at its full load speed of 980 rpm. The total stator losses are 1.2 kW and the friction and windage losses are 1.5 kW. Calculate (i) slip (ii) rotor ohmic losses (iii) shaft power and (iv) efficiency
3. (a) Briefly explain different speed control methods of three phase IM and discuss the applications and limitations of each method?
- (b) Write a brief note on double cage induction motor and Induction generator?
4. (a) Derive the EMF equation of three phase alternator? Also define distribution and pitch factor?
- (b) A 3-phase 16-pole alternator has the following data: Number of slots = 192, conductors/slot = 8; coil span 10 slots, speed of the alternator = 375 rpm, flux per pole = 55 m wb. Calculate phase and line emf voltage.
5. (a) A 30 kVA, 440 V, 50 Hz, 3 Phase, Star connected alternator gave the following test data

$I_f(A)$	2	4	6	7	8	10	12	14
$V_{oc}(V)$	155	287	395	440	475	530	570	592
$I_{sc}(A)$	11	22	34	40	46	57	69	80

Armature resistance/ph is  $0.15 \Omega$ . Find the regulation at full load 0.8 pf lag by MMF method

- (b) Explain the effect of variation of excitation on the parallel operation of alternators with necessary phasor diagrams?
6. (a) Derive an expression for power developed in a cylindrical rotor synchronous motor in terms of load angle and synchronous impedance?
- (b) A 400V, 50 Hz, 33kW, 3 phase star connected synchronous motor has a full load efficiency of 85%. The synchronous impedance of the motor is  $(0.2+j1.4) \Omega/ph$ . If the excitation of the motor is adjusted to give a leading p.f of 0.8, Calculate induced emf developed for full load?
7. (a) Using double field revolving field theory explain the torque-slip characteristics of a single phase induction motor and prove that it cannot produce starting torque?
- (b) Explain the constructional details and principle of operation of a split phase induction motor?



Subject Code: R16ME2202

II B.Tech II Semester Regular & Supple Examinations, November-2020

THEORY OF MACHINES-I  
(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

- (a) Distinguish between Mechanism and Machine.  
(b) State and prove the Kennedy's theorem as applicable to instantaneous centres of rotation of three bodies.  
(c) Explain the different motions that a follower can have.  
(d) What do you understand by the term 'gyroscopic couple'?  
(e) What is the function of a 'governor'? How does it differ from that of a 'flywheel'?  
(f) Explain the terms Module, Diametral pitch and pressure angle.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- (a) Explain the Whitworth quick return mechanism with a neat sketch. [6]  
(b) Define Inversion, Explain the working of Oldham's coupling and Scotch yoke mechanism. [6]

3. For the configuration of a slider-crank mechanism shown in Fig.1, calculate

- The acceleration of the slider at B
- The acceleration of point E
- The angular acceleration of link AB.

OA rotates at 20 rad/s counter-clockwise

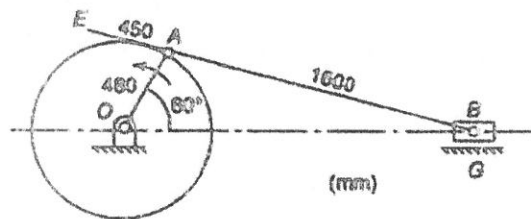


Figure 1

- Draw the profile of a cam operating a roller reciprocating follower and with the following data:  
Minimum radius of cam = 25mm, Lift = 30 mm, Roller diameter = 15 mm. The cam lifts the follower for 120° with SHM followed by a dwell period of 30°. Then the follower lowers down during 150° of the cam rotation with uniform acceleration and deceleration followed by a dwell period. If the cam rotates at a uniform speed of 150rpm, calculate the maximum velocity and acceleration of the follower during the descent period.

5. The mass of a turbine rotor of a ship is 8 tonnes and has a radius of gyration 0.6 m. It rotates at 1800 rpm clockwise when looking from the stern. Determine the gyroscopic effects in the following cases:
- If the ship travelling at 100 kmph steers to the left in a curve of 75 m radius,
  - If the ship is pitching and the bow is descending with maximum velocity. The pitching is simple harmonic, the periodic time being 20 seconds and the total angular movement between the extreme positions is  $10^\circ$ .
6. The arms of a Porter governor are 280 mm long. The upper arms are pivoted on the axis of rotation. The lower arms are attached to a sleeve at a distance of 30 mm from the axis of rotation. The mass of the load on the sleeve is 60 kg and the mass of each ball is 8 kg. Determine the equilibrium speed when the radius of rotation of the balls is 200 mm. If the friction is equivalent to a load of 20 N at the sleeve, what will be the range of speed for this position?
7. An epicyclic gear train shown in Fig. 2, the internal wheels A and B and compound wheels C and D rotate independently about axis 'O'. The wheels E and F rotate on pins fixed to the arm G. E gears with A and C. F gears with B and D.
- All the wheels have the same module and the number of teeth are  $T_C = 28$ ,  $T_D = 26$ ,  $T_E = T_F = 18$ .
- Find the number of teeth on A and B
  - If the arm G makes 100 rpm clockwise and wheel A is fixed, find the speed of wheel B
  - If the arm G makes 100 rpm clockwise and wheel A makes 10 rpm counter clockwise, find the speed of wheel B

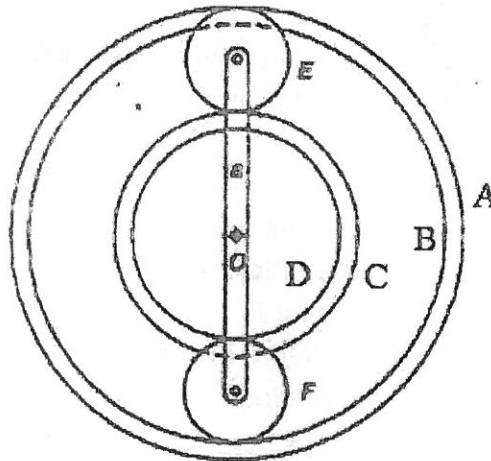


Figure.2

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Subject Code: R16ME2203

## II B.Tech II Semester Regular & Supple Examinations, November-2020 APPLIED THERMODYNAMICS

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

### PART-A

- (a) Define volumetric efficiency  
(b) What are the two types of injection pump that are commonly used?  
(c) What are the factors affecting delay period in SI engine  
(d) Why Morse test is not suitable for single cylinder engine?  
(e) Define isothermal efficiency and explain its significance.  
(f) List out characteristics of centrifugal compressor.

[2+2+2+2+2+2]

### PART-B

4 X 12 = 48

- (a) What is the difference between air standard cycle and fuel air cycle analysis? Explain the significance of the fuel air cycle.  
(b) Discuss about pumping and rubbing friction losses
- (a) Write the working of simple carburettor  
(b) Derive an expression for air fuel ratio of a simple carburettor.
- (a) Explain the phenomena of knock in SI engines.  
(b) Explain about various types of combustion chambers used in SI engines.
- (a) Explain the principle involved in measurement of brake power.  
(b) During 15 minutes trial of an internal combustion engine of 2-stroke single cylinder type the total 4 kg fuel is consumed while the engine is run at 1500 rpm. Engine is cooled employing water being circulated at 15 kg/min with its inlet and exit temperatures as 27°C and 50°C. The total air consumed is 150 kg and the exhaust temperature is 400°C. The atmospheric temperature is 27°C. The mean specific heat of exhaust gases may be taken as 1.25 kJ/kg K. The mechanical efficiency is 0.9. Determine, the brake power, brake specific fuel consumption and indicated thermal efficiency. Also draw energy balance on per minute basis. Brake torque is 300 Nm and the fuel calorific value is 42 MJ/kg. [8M]
- (a) Discuss the indicator diagram for reciprocating compressor. Also describe the factors responsible for deviation of hypothetical indicator diagram to actual indicator diagram.  
(b) Obtain the expression for volumetric efficiency of single stage reciprocating compressor without clearance volume.
- (a) A centrifugal compressor delivers free air of 18 kg/min. Air is sucked at static states of 1 bar, 27°C with inlet velocity of 50 m/s. The total head pressure ratio is 4 and isentropic efficiency of compressor is 0.75. The mechanical efficiency of motor attached to it is 0.90. Determine total head temperature of air at exit of compressor and brake power required to drive compressor.  
(b) Compare the axial flow compressor with centrifugal compressors.

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**Subject Code: R16ME2204**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**

**HYDRAULIC MACHINERY AND PNEUMATIC SYSTEMS**

**(ME)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

1. (a) Write an expression for the force exerted by a jet of water moving vertical plate in the direction of the jet?
- (b) Write a brief note on classification of Turbines.
- (c) What is negative slip in Reciprocating Pump? Why does it occur?
- (d) A pressure compensating valve always precedes a speed control valve. Is this true?
- (e) What is the function of accumulator?
- (f) Point out the purpose of providing lubricator in a pneumatic circuit.

[2+2+2+2+2+2]

**PART-B**

**4 X 12 = 48**

2. (a). Show that the force exerted by a jet on a moving curved vane is greater than that on a moving flat plate. [6M]  
(b). A jet of water 70 mm diameter having a velocity of 25 m/s, strikes normally a flat smooth plate. Determine the thrust on the plate (i) if the plate is at rest. (ii) If the plate is moving in the same direction as that of the jet with a velocity of 5 m/s. Also find the work done per second on the plate in the each case and the efficiency of the jet when the plate is moving. [6M]
3. (a). Describe the governing mechanism of Kaplan Turbine with a neat sketch. [6M]  
(b). A Pelton Wheel has a mean bucket speed of 12 m/s and is supplied with water at a rate of 750 liters per second under a head of 35 m. If the bucket deflects the jet through an angle of  $160^\circ$ , find the power developed by the turbine and its hydraulic efficiency. Take the coefficient of velocity as 0.98. Neglect friction in the bucket. Also determine the overall efficiency of the turbine if its mechanical efficiency is 75%. [6M]

4. Derive the expression for work done by a Centrifugal Pump on Water with neat sketches of Velocity Triangles. [12M]
5. (a). With neat sketch describe the construction and operation of pressure regulated low control valve. [6M]  
(b). Explain the working of four way two position direction control valve. [6M]
6. (a). What are the Basic requirements for pneumatics systems? Discuss in detail. [6M]  
(b). Describe various pneumatic actuators with neat sketches? [6M]
7. (a). Describe the basic components used in pneumatic system , show the basic pneumatic system and symbolic description of basic pneumatic system. [6M]  
(b). What is cascade control Explain giving suitable example circuit. [6M]

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**Subject Code: R16ME2205**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**

**MANUFACTURING TECHNOLOGY**

**(ME)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

1. (a) Write the requirements of good pattern?
- (b) What is the function of core print?
- (c) Define arc length and arc crater?
- (d) Why is flux used in soldering and brazing?
- (e) What are the various forming processes?
- (f) What is wire drawing?

[2+2+2+2+2+2]

**PART-B**

4 X 12 = 48

2. (a) Explain various properties required for the moulding sand?
- (b) Discuss the various pattern allowances? [6+6]
3. With a neat sketch explain the centrifugal casting method? 12
4. What is meant by welding defect? Explain any five welding defects? 12
5. (a) Explain the plasma arc welding process with a neat sketch and list out its advantages?
- (b) Describe the sequence of steps in the cycle of a resistance spot welding operation? [8+4]
6. (a) Explain hot working and cold working with their advantages and limitations?
- (b) Explain various forging operations? [6+6]
7. (a) Explain the forward and backward Extrusion process?
- (b) With the help of sketch explain the process of Tube drawing? [6+6]

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**Subject Code: R16EC2201**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**  
**SWITCHING THEORY AND LOGIC DESIGN**  
**(ECE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

**PART-A**

1. (a) Convert the following number  $(11001101.0101)_2$  to base 8 and base 4.
- (b) State duality theorem.
- (c) What is decoder? How do you convert a decoder in to a demultiplexer?
- (d) What is PAL? How does it differ from PROM and PLA?
- (e) Compare synchronous & Asynchronous circuits
- (f) Define State equivalence and machine minimization.

[2+2+2+2+2+2]

**PART-B**

4 X 12 = 48

2. (a) Represent +25 and -25 in sign-magnitude, sign-1's complement and sign-2's complement representation.
- (b) The message below has been coded in Hamming code for BCD transmitted through a noisy channel. Decode the message assuming that at most a single error has occurred in each code word. "1001001011100111101100011011"
3. (a) Simplify the following Boolean functions to minimum number of literals.  
(i)  $F = ABC + ABC' + A'B$ . (ii)  $F = (A+B)' (A'+B')$ .
- (b) Simplify the following Boolean function for minimal POS form using K-map and implement using NOR gates.  
 $F(W, X, Y, Z) = \Sigma(1, 2, 5, 6, 9) + d(10, 11, 12, 13, 14, 15)$ .
4. (a) Explain the operation of priority encoder?
- (b) Design 4x16 decoder using two 3x8 decoders with block diagram.
5. (a) Explain the general combinational PLD configuration with suitable block diagram.
- (b) Give the logic implementation of a 32 x 4 bit & 8 x 4 bit ROM using suitable decoder.
6. (a) Design a mod-6 asynchronous counter using T-flip flop.
- (b) Draw the circuit diagram of 4 bit ring counter using D Flip-Flops and explain its operation with the help of bit pattern.
7. (a) Discuss mealy and Moore machine models of sequential machines.
- (b) Explain the minimization procedure for determining the set of equivalent state of a specified machine M.

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II B.Tech II Semester Regular & Supple Examinations, November-2020  
ELECTRONIC CIRCUIT ANALYSIS  
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

PART-A

- (a) Draw the simplified, low-frequency hybrid-pi BJT model.  
(b) Define gain-bandwidth product for a CE amplifier.  
(c) What are the main characteristics of Darlington amplifier?  
(d) What are the advantages and disadvantages of negative feedback in amplifiers?  
(e) State the frequency of RC phase-shift oscillator.  
(f) Define conversion efficiency of power amplifiers.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- (a) How to determine h-parameters from transistor characteristics?  
(b) Explain FET biasing techniques.
- (a) Draw the high-frequency hybrid-pi model of CE transistor. Deduce the expression for  $g_m$ ,  $g_{b'e}$ ,  $\Gamma_{bb'}$ ,  $g_{ce}$ .  
(b) Determine the hybrid-pi parameters. Consider the low-frequency parameters at 300°K,  $h_{ie}=500\Omega$ ,  $h_{re}=10^{-4}$ ,  $h_{fe}=100$  and  $h_{oc}=2 \times 10^{-4}$  A/V for  $I_c=10\text{mA}$  and  $V_{cc}=8\text{V}$ .
- (a) What is cascading? Explain the analysis of Darlington pair amplifier.  
(b) Explain low frequency response of RC coupled CE amplifier.
- Explain the principle of negative feedback in amplifiers. Show quantitatively the effect of negative feedback on the characteristics of the amplifier such as stability of the amplifier, bandwidth, distortion and noise figure.
- (a) Draw the Circuit diagram and derive the expression for frequency of oscillations for Hartley oscillator.  
(b) A Hartley oscillator circuit having two individual inductors of 0.5mH each, are designed to resonate in parallel with a variable capacitor that can be adjusted between 100pF and 500pF. Determine the upper and lower frequencies of oscillation.
- (a) In a series fed class-A power amplifier, explain the importance of the position of operating point on output signal swing. Show that the conversion efficiency is 25%.  
(b) Derive the expression for maximum value of conversion efficiency of class A transformer coupled power amplifier.

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**Subject Code: R16EC2203**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**

**PULSE AND DIGITAL CIRCUITS**

**(ECE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

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**PART-A**

1. (a) Calculate the lowest square wave frequency that can be passed by an amplifier with a lower cut-off frequency of 10Hz, if the output tilt is not to exceed 2% ?.
- (b) Write most important applications of voltage comparators.
- (c) What are the operating voltages in avalanche breakdown and zener breakdown?
- (d) What do you mean by Stable state and Quasi stable state.
- (e) What do you mean by blocked condition in an astable multivibrator?
- (f) What do you mean time base generator?

[2+2+2+2+2+2]

**PART-B**

- 2 a) Derive an expression for 3 dB cut off frequencies of low pass RC circuit and high pass RC circuit.  
b) Obtain the relation between rise time and bandwidth of a low pass circuit. [6+6]
- 3 a) With the help of a circuit diagram, explain the working of a two level diode clipper. [7+5]  
b) State and prove the clamping circuit theorem.
- 4 a) Compare logic families. [6+6]  
b) Write short notes on transistor switching times.
- 5 a) How can you trigger bistable multivibrator using RC circuit and diode. [8+4]  
b) Explain the importance of Commutating Capacitors.
- 6 a) Which multivibrator can be used as Voltage to Frequency converter and explain it. [4+8]  
b) Design a Schmitt trigger circuit for the following specifications:  $UTP = 8V$ ,  $LTP = 5V$ ,  $I_C(sat) = 2mA$ ,  $h_{FE(min)} = 25$ .
- 7 a) Explain the basic principles of the Miller and Bootstrap time base generator. [6+6]  
b) Explain how to cancel the pedestal in a sampling gate with suitable circuit diagram.

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Subject Code: R16EC2204

**II B.Tech II Semester Regular & Supple Examinations, November-2020**

**ANALOG COMMUNICATIONS**

**(ECE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

1. (a) What are the primary resources of any communication system?  
(b) What are the disadvantages of conventional (or) double side band full carrier system?  
(c) Compare WBFM and NBFM.  
(d) Compare the noise performance of AM receiver with that of DSB-SC receiver.  
(e) Classify the radio transmitters and receivers.  
(f) Write the difference between pulse analog and digital modulation techniques?

[2+2+2+2+2+2]

**PART-B**

**4 X 12 = 48**

2. (a) With the help of block diagram explain the elements of communication system. [6]  
(b) Derive the expression for transmitted power of AM signal. [6]
3. (a) Explain the generation of DSBSC waves using Ring Modulator? [4]  
(b) Describe the generation SSB using phase shift method. A SSB transmitter radiates 5 kW when the modulation percentage is 50%. How much carrier power is required if we want to transmit the same message by an AM transmitter? [8]
4. (a) Which method of FM signal generation is the preferred choice, when the stability of the carrier frequency is of major concern? Discuss about the method in detail. [8]  
(b) In an FM system, when an audio frequency is 500 Hz, and the AF voltage is 2.4 V, the frequency deviation is 4.8 KHz. If the AF voltage increased to 10 V while audio frequency dropped to 300 Hz, then what is the new deviation. Find the modulation index in each case. [4]
5. (a) Discuss about noise effect in AMSSB-SC and obtain expression for figure of merit. [6]  
(b) Explain about the Pre-Emphasis & De-Emphasis Filtering? [6]
6. (a) With the help of neat block diagram explain super heterodyne receiver? [6]  
(b) Explain frequency stability in FM transmitter. [6]
7. (a) Explain why a single channel PPM of system requires the transmission of synchronization signal, where as a single channel PAM or PDM system does not it. [6]  
(b) Compare and contrast FDM and TDM. [6]

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**Subject Code: R16EC2205**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**  
**ELECTROMAGNETIC WAVES AND TRANSMISSION LINES**  
**(ECE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

- (a) Mention the physical significance of curl of a vector field.  
(b) Write the Maxwell's equations from Ampere's law both in integral and point forms.  
(c) State Lorenz law of force.  
(d) Compute the reflection and transmission coefficients of an electric field wave travelling in air and incident normally on a boundary between air and a dielectric having permittivity of 4.  
(e) What are electric and magnetic boundary conditions?  
(f) An Open wire Telephone Line has  $R=10$  ohms/Km,  $L=0.0037$ H/Km,  $C=0.0083$  micro Farad/Km and  $G=0.4$  micro mhos/Km. Determine  $Z_0$  at 1000Hz.

[2+2+2+2+2+2]

**PART-B**

**4 X 12 = 48**

- (a) State and prove Gauss's law. Express Gauss's law in both integral and differential forms. (6)  
(b) Derive Poisson's and Laplace's equations starting from Gauss's law. (6)
- (a) Derive the expression for the magnetic field intensity due to rectangular coil carrying current  $I$  in a uniform field. Deduce the equation to find the  $H$  due to square coil. (8)  
(b) Find the magnetic field intensity at the centre  $O$  of a square loop of sides equal to  $5M$  and carrying  $10A$  of current. (4)
- (a) Derive and explain the Maxwell's equations in point form and integral form using Ampere's circuital law and Faraday's law. (8)  
(b) Compare the field theory and circuit theory. (4)
- (a) Obtain the electromagnetic wave equation for free space in terms of magnetic field. (6)  
(b) Calculate the intrinsic impedance, the propagation constant and wave velocity for a conducting medium in which  $\sigma = 58$  ms/m,  $\mu_r = 1$  at a frequency of  $f = 100$  M Hz. (6)
- For an incident wave under oblique incident from medium of  $\epsilon_1$  to medium of  $\epsilon_2$  with parallel polarization  
(a) Define and establish the relations for the critical angle  $\theta_c$  and Brewster angle  $\theta_{Br}$  for non-magnetic media with neat sketches. (8)  
(b) Plot  $\theta_c$  and  $\theta_{Br}$  versus the ratio of  $\epsilon_1/\epsilon_2$  (4)
- (a) Derive the General Line Equation of a Transmission Line. (6)  
(b) The primary Constants of a cable are  $R=80$  ohms/Km,  $L= 2mH$ ,  $G= 0.3$  micro mhos/Km and  $C= 0.07$  micro Farad/Km. Calculate the Secondary Constants and the velocity of propagation at 100Hz. (6)

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Subject Code: R16CS2201

II B.Tech II Semester Regular/Supple Examinations, November-2020  
STATISTICAL PROGRAMMING WITH R  
(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

PART-A

1. (a) Explain different matrix operation function in R?
- (b) Null hypothesis
- (c) Give an example of List in R
- (d) Write R program script for summing up number from 1 to 10 using loop.
- (e) Mention any two applications of t-distribution
- (f) How you can produce co-relations and covariances in R?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) The diameter of an electric cable is assumed to be continuous random variables  $X$  with Probability density function  $f(x)=6x(1-b)$ ,  $0 \leq x \leq 1$ . Determine  $b$  such that  $P(X>b)=P(X<b)$   
[6]
- (b) A population random variable has mean 100 and standard deviation 16. What are the mean and standard deviation of the sample mean for random samples of size 4 drawn with replacement.  
[6]
3. (a) Explain briefly the following i) Type I error ii) Type II error [4]
- (b) A sample of 11 rats from a central population had an average blood viscosity of 3.92 with a S.D of 0.61. Estimate the 95% confidence limits for the mean blood viscosity of the population.  
[8]
4. (a) Write R code to generate first  $n$  terms of a Fibonacci series [4]
- (b) What is data frame? Create a data frame of name of the student and 5 subjects combination of 10 students. [6]
5. (a) How to create user defined function in R? How to define default values in R? Write syntax and examples. [6]
- (b) Write about sort, rank and order functions with examples. Write about functions for statistical distributions. [6]
6. (a) A sample poll of 300 voters from district A and 200 voters from district B showed that 56% and 48%, respectively, were in favor of a given candidate. At a level of significance of 0.05, test the hypothesis that the candidate is preferred in district A. [6]

(b) Given

Treatment	Fabric			
	1	2	3	4
1	17.6	19.6	18.4	19.8
2	19.2	20.4	19.8	20.7
3	17.2	19.0	17.1	17.3
4	17.0	20.1	17.1	17.7
5	17.4	18.8	17.8	16.5

Perform ANOVA to test whether there is any significant difference between treatments and fabrics [6]

7. (a) Write R code to generate the probability distribution table for number of successes from a binomial distribution where  $n=5$  and probability of success in each trial is 0.25 [6]

(b) Explain functions for accessing the keyboard, Reading and writing files [6]

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**Subject Code: R16CS2202**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**

**OPERATING SYSTEMS**

**(CSE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

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**PART-A**

1. (a) Define Kernel .
- (b) Explain the terms Protection & Security.
- (c) What is Synchronization ?
- (d) Define Bound Buffer Problem .
- (e) List out various causes for Thrashing .
- (f) Differentiate Contiguous and Linked Allocation?

[2+2+2+2+2+2]

**PART-B**

**4 X 12 = 48**

2. (a) List out various functions of Operating System .
- (b) With neat sketch explain Layered approach of Operating System .
3. (a) What is PCB ? Explain different states of process with neat diagram .
- (b) What is Scheduling ? Discuss about priority scheduling with an example.
4. (a) What is Starvation ? Write about Reader's and Writer's problem .
- (b) What is Critical section ? How Critical section problem is solved with Peterson Solution ?  
Explain .
5. (a) What is Hashing ? With a neat sketch explain about Paging .
- (b) Discuss about LRU Page Replacement Algorithm .
6. (a) What is File ? List out different File Operations .
- (b) Explain about Tree Structured Directory with Example .
7. (a) What is Mounting ? How Mounting is implemented in file system ? Explain .
- (b) Briefly discuss about LOOK Scheduling Algorithm .

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Subject Code: R16CS2204

II B.Tech II Semester Regular & Supple Examinations, November-2020

DATABASE MANAGEMENT SYSTEMS

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-

B

All questions carry equal marks of 12.

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**PART-A**

1. (a) What is storage manager?
- (b) Give an example of derived attribute and represent it.
- (c) What is trigger in PL/SQL?
- (d) Illustrate Join Dependency
- (e) System log
- (f) List out the operations of files.

[2+2+2+2+2+2]

**PART-B**

4 X 12 = 48

2. (a) Explain the difference between external, internal, and conceptual schemas. How are these different schema layers related to the concepts of logical and physical data independence? [8]
- (b) Explain Client Server Architecture [4]

3. (a) Draw and explain E-R diagram of an Airline reservation system? [6]
- (b) List out SQL DATE functions with example [6]

4. (a) What is join operation in relational algebra? Discuss in detail about variants of joins? [8]
- (b) What are the various types of cursors in PL/SQL? [4]

5. (a) What is join dependency? How is it different to that of multi-valued dependency and functional dependency? Give an example for join dependencies and multi-valued dependencies.
- (b) What are the referential Integrity constraints?

6. (a) What is transaction? Briefly describe recovery algorithms. [6]
- (b) Explain read-only, write-only & read-before-write protocols in serializability. [6]

7. (a) Explain Internal Hashing. [4]
- (b) Give comparison of different file organizations. [8]

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**Subject Code: R16CS2205**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**

**SOFTWARE ENGINEERING**

**(CSE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

**PART-A**

1. (a) What is software process? Explain process classification.
- (b) How can you define prototyping?
- (c) What are the characteristics of good software design?
- (d) Is fault and failure both are same. Justify your answer.
- (e) Define change of control.
- (f) What is the difference between verification and validation?

[2+2+2+2+2+2]

**PART-B**

**4 X 12 = 48**

2. (a) Explain about evaluation of software engineering methodologies. [8 M]
- (b) What is software? What are the development lifecycle phases? [4 M]
3. (a) What are software requirements? How to analysis the requirements? [8 M]
- (b) Write short note on object oriented analysis. [4 M]
4. (a) What are the design principles? Explain in detail. [8 M]
- (b) Write short note on modular design. [4 M]
5. (a) What are the levels of testing? Explain in detail. [8 M]
- (b) Explain about code documentation. [4 M]
6. (a) What are software metrics and measurements? [8 M]
- (b) Write short note on effort estimation techniques. [4 M]
7. (a) Explain the CMM model. [8 M]
- (b) Explain briefly about reengineering activities. [4 M]

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**Subject Code: R16CS2206**

**II B.Tech II Semester Regular & Supple Examinations, November-2020**  
**PROFESSIONAL ETHICS, VALUES AND PATENTS**  
**(CSE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

---

**PART-A**

1. (a) What is the importance of character?
- (b) Explain the role of Engineer as a leader?
- (c) Define industrial espionage?
- (d) What is cyber law?
- (e) Define copy right?
- (f) What are cyber crimes?

[2+2+2+2+2+2]

**PART-B**

**4 X 12 = 48**

2. (a) To earn name and fame in a job/ society one should have moral values, character, commitment etc. Do you agree? Explain?
- (b) What is civic virtue? Explain?
3. (a) explain any two ethical theories?
- (b) Discuss about professional ethics of engineers?
4. what are the rights and responsibilities of engineers?
5. (a) Discuss the ethical obligations in IP law?
- b) What are the innovations in trade related intellectual property rights?
6. (a) What are the various types of Intellectual Property rights?
- (b) What is the procedure for registration of a copy rights?
7. (a) What are various cyber crimes and explain about them?
- (b) When information is called confidential information?

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