K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B.Tech. VII Sem (CE - R15) Regular & Supple Examinations of OCT/NOV 2019

SUB: CONSTRUCTION PLANNING & MANAGEMENT

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain about resources for Construction Industry	(7M)
	(b)	What is mean by resource leveling and crashing?	(7M)

(OR)

2.	(a)	Write about scheduling with example	(7M)
	(b)	Discuss the Stages of Construction	(7M)

UNIT – II

3.	(a)	What is a Gantt bar chart? Explain with the help of a suitable example, the method of preparing a bar chart.	(7M)
	(b)	Defined 'earliest event time' and 'latest occurrence event time'. How these can be determined? Explain the tabular form for determining these	(7M)

(OR)

4.	(a)	What are different elements present in PERT network and explain with an example	(7M)
	(b)	Explain in detail Resources Smoothing method of Resources allocation problems.	(7M)

UNIT – III

5.	(a)	Describe the various applications of a bulldozer.	(7M)
	(b)	List any four operations that can be performed by a bull dozer	(7M)

(OR)

6.	(a)	Write short notes on following. 1. Crawler tractor 2. Wheel tractor	(7M)
	(b)	What are the uses of power shovels? Describe with neat sketch basic parts and operation of power shovel.	(7M)

UNIT – IV

7.	(a)	Explain about Ethical Audit Inspection and Quality Control	(7M)
	(b)	Explain briefly on Ethical Audit Procedures	(7M)

(OR)

8.	(a)	Explain about aspects of Project Realization	(7M)
	(b)	Explain about the need for Inspection and Quality Control Principles of Inspection	(7M)

UNIT-V

9.	Briefly explain about (i) equipment management in construction projects. (ii) Safety management (iii) Job planning	(14M)

(OR)

10.	(a)	Discuss about quality control and safety engineering	(7M)
	(b)	Explain the different Construction methods	(7M)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: ADVANCED FOUNDATION ENGINEERING

Time : 3 Hours   Max. Marks: 70
Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Draw the pressure distribution diagrams for different cases of sheet pile walls and write the equations for determining the depth of embedment of sheet piles in sands and clays. (7M)

    (b) A cantilever sheet pile of 5 m is embedded in a purely cohesive soil of cohesion 50 kN/m^2 and unit weight 18 kN/m^3. The wall is subjected to a granular soil pressure having angle of internal friction 30° and unit weight 20 kN/m^3. Compute the depth of embedment of the sheet pile. (7M)

(OR)

2. (a) Briefly describe about design of anchored bulkhead by fixed-earth method? (7M)

    (b) Write about the cantilever sheet piling in granular soils? (7M)

UNIT – II

3. (a) Describe the methods for the design of various components of a braced cut, stating clearly the assumptions made. (7M)

    (b) How the design of a cellar coffer dam on rock differ from that on a soil bed? (7M)

(OR)

4. (a) What is coffer dam? Explain the different types of coffer dams (7M)

    (b) Explain the construction of circular coffer dams. (7M)

UNIT – III

5. (a) Describe about design and analysis of well foundations? (7M)

    (b) What are the measures to be taken for rectification of tilts and shifts of well foundations? (7M)

(OR)

6. (a) A circular well of 7 m external and 4.5 m internal diameter is embedded to a depth of 12 m below maximum scour level in a sand deposit (γ_{sat} = 18 kN/m^3, ϕ = 30°). The well is subjected to a horizontal force of 750 kN acting at a height of 6 m above scour level. Determine the allowable transverse force due to earth pressure assuming rotation about a point above the base. Take factor of safety against mobilization of passive earth pressure as 2.0. Use Terzaghi's analysis? (7M)

    (b) Describe the forces to be considered in the design of a well foundation. (7M)

UNIT – IV

7. (a) Is Collapse potential, a major parameter to be considered when dealing with Collapsible soils? Justify your answer with proper reasoning. (7M)

    (b) Explain the mechanism of swelling pressure and swelling potential. (7M)

(OR)

8. (a) How to identify the expansive soils? Explain the causes of swelling in expansive Soils? (7M)

    (b) List out the major precautions to be taken in design and execution of foundations in Expansive soils. (7M)

UNIT-V

9. (a) Explain any two methods suitable for stabilization of cohesive soils. (7M)

    (b) Explain in detail the categories of grouting in ground improvement. (7M)

(OR)

10. (a) What are the functions and applications of geo-grid? (7M)

(b)   What are the various components of reinforced earth?   (7M)

UNIT - I

1. (a)   What is a spillway? Explain the essential requirements of a spillway. What are the various components of a spillway?   (7M)

    (b)   Explain the different types of spillways.   (7M)

(OR)

2. (a)   Describe with neat sketches (i) Drum gates (ii) Roller gates and (iii)Tainter gates.   (7M)

    (b)   What is a stilling basin? What are the functions of (i) Chute blocks and (ii) Baffle blocks in stilling basins?   (7M)

UNIT – II

3. (a)   What is a fall in a canal? Why it is necessary? How do you select its location?   (7M)

    (b)   Explain the procedure of designing a straight glacis fall.   (7M)

(OR)

4.   Design a Sarda type fall across a canal for the following data: (14M)

    (i) Full supply discharge $\frac{u/s}{d/s} = \frac{15}{15}$ m³/s (ii)Drop = 1.0 m

    (iii)Full supply level $\frac{u/s}{d/s} = \frac{101.00}{100.00}$ m (iv)Full supply depth $\frac{u/s}{d/s} = \frac{1.8}{1.8}\ m$

    (v) Bed width $\frac{u/s}{d/s} = \frac{10}{10}\ m$ Design the floor on Bligh's theory using Co-efficient of creep = 10.

UNIT – III

5. (a)   What is a distributary head regulator? What are the functions of a distributary head regulator?   (7M)

    (b)   Describe the procedure for designing a head regulator for a distributary.   (7M)

(OR)

6. (a)   What is an outlet? What are the requirements of a good outlet? What are the different types of outlets?   (7M)

    (b)   What is flexibility of an outlet? Derive an expression for the flexibility of an outlet.   (7M)

UNIT – IV

7. (a)   What is a cross-drainage work? Differentiate between (i) Aqueduct and Syphon aqueduct and (ii) Super passage and Canal syphon.   (7M)

    (b)   Explain the factors affecting the selection of suitable type of cross drainage work.   (7M)

(OR)

8. (a)   Explain the design principles of aqueduct.   (7M)

    (b)   Discuss the various factors affecting the suitability of aqueduct and syphon aqueduct.   (7M)

UNIT-V

9. (a)   Give a detailed list of the various purposes for which a multipurpose project is undertaken.   (7M)

    (b)   Discuss the various steps involved in the planning of water resources development projects.   (7M)

(OR)

10. (a)   Explain how 'project evaluation' is performed?   (7M)

(b) Explain the various 'management strategies'. (7M)

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I
1. (a) Draw a typical cross section of permanent way and explain the functions of various components.
   (b) Describe the functions and requirements of rails in a railway track.
   (OR)
2. (a) What is the necessity of bearing plates? Under what circumstances, the use of such plates is warranted.
   (b) Discuss about adzing of sleepers and sleeper density.

UNIT – II
3. (a) Explain various types of gradients.
   (b) Discuss about maintenance of railway tunnels
   (OR)
4. (a) How do you define the super elevation? What are the objects of providing super elevation on curves of a railway track?
   (b) Explain briefly the different types of station yards. With the aid of neat sketches, explain the functioning and types of a marshalling yard.

UNIT – III
5. (a) What is a wind rose diagram? What is its utility? What are its types? Explain each type.
   (b) Explain the concepts of terminal buildings.
   (OR)
6. (a) Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.
   (b) Explain the layout and functions of terminal area.

UNIT – IV
7. (a) Explain about dock entrances and entrance locks.
   (b) Discuss about Greek harbours and Roman harbours
   (OR)
8. (a) Explain briefly the design and construction of basin or dock walls.
   (b) Explain the classification of breakwaters.

UNIT-V
9. (a) Explain about grab, rock and dipper dredgers.
   (b) Discuss about maintenance of lock gates and caissons.
   (OR)
10. (a) Explain how freshwater is maintained in docks and harbours.
    (b) How to organize the dredging and maintenance activities in a harbour?

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: DESIGN & DETAILING OF STEEL STRUCTURES

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) What is shape factor of the section? Find the shape factor for a solid circular section? (7M)

   (b) A Tie member which is consisting of an ISA 80x50x8 mm (Fe -410 grade steel) is welded to a 12 mm thick gusset plate at the site design. The welds to transmit the load equal to the design strength of the member. (7M)

(OR)

2. Design a bridge truss diagonal member subjected to a factored tensile load of 300 kN. The length of the diagonal member is 3m . The tension member is connected to a gusset plate of 16 mm thick with one line of 20 mm diameter bolts of grade 8.8. (14M)

UNIT – II

3. An ISA 100x100x6mm (fy=250 N/sq.mm) is used as a strut in a truss. The length of the strut between the intersections at each end is 3.0 m. Calculate the strength of the strut if, (a). it is connected by two bolts at each end (b). it is connected by one bolt at each end (c). it is welded at each end (14M)

(OR)

4. An ISA 100x100x6mm (fy=250 N/sq.mm) is used as a strut in a truss. The length of the strut between the intersections at each end is 3.0 m. Calculate the strength of the strut if, (14M)

   (a). it is connected by two bolts at each end (b). it is connected by one bolt at each end

   (c). it is welded at each end

UNIT – III

5. Design a laterally unsupported beam for the following data (14M)
   Effective span =4m, Maximum Bending moment=550kN-m
   Maximum Shear force=200kN, Use steel of gade Fe410.

(OR)

6. A simply supported steel joist of 4m effective span is laterally supported throughout the length it carries a total UDL of 40kN including selfweight. Design an appropriate section using steel of grade Fe410. (14M)

UNIT – IV

7. Design a stiffened seat connection for an ISMB350@514N/m transmitting an end reaction of 320kN (due to factored loads) to a column section ISHB300@576.8N/m.The steel is of grade Fe410 (14M)

(OR)

8. A bracket plate 10mm thick is used to transmit a reaction of 140kN at an eccentricity of 100mm from the column flange as shown in the figure design the weld (14M)
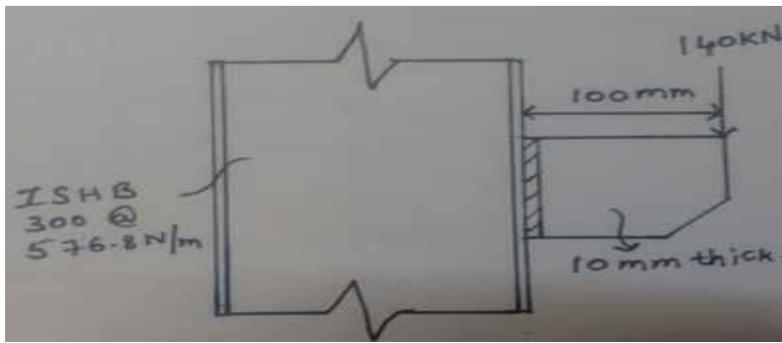
UNIT-V

9. A column consisting of ISHB350@661.2N/m carries a axial factored compressive load of 1700kN.Design a suitable gusset base. The base plate rest on M15 grade concrete pedestal (14M)

(OR)

10. Design a slab base for a column ISHB350@710.2N/m subjected to an axial factored compressive load of 1500kN when the load is transferred to the base plate by direct bearing of column flanges. (14M)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: DESIGN & DETAILING OF REINFORCED CONCRETE STRUCTURES - II

Time : 3 Hours   Max. Marks: 70
Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. A floor consists of 150 mm thick slab monolithically constructed with 300 mm wide T-beams spaced at 3.6 m c/c spacing. The effective span of beams is 5 m. The slab is subjected to a superimposed load of 5 kN/m^2. Design an intermediate T-beam for flexure. Use M20 concrete and Fe 415 steel. (14M)

(OR)

2. Design a simply supported circular slab carrying a superimposed load of 4 kN/ m^2. The diameter of the circular slab is 5 m. Use M20 concrete and Fe 415 steel. (14M)

UNIT – II

3. Design a braced column of size 300mmX 500mm subjected to an ultimate axial load of 2000 kN and ultimate moment of 70 kNm and 50 kNm with respect to major and minor axis. Assume the column is bent in double curvature in both directions. The unsupported length of column is 7 m. The column is restrained against sway. Use M20 concrete and Fe 415 steel. (14M)

(OR)

4. Determine the maximum factored load carrying capacity of a square column 350mmX350mm reinforced with 8 bars of 20mm diameter, uniformly spaced along all the four sides with an effective cover of 50mm. The column is braced against side sway and has unsupported length of 5.0m and effective length factor of 1 about the both axes. Assume M20 mix and Fe415 Steel. (14M)

UNIT – III

5. Design a rectangular footing of uniform thickness for an axially loaded column of size 300 mm x 600 mm, load on the column is 1150 kN. Safe bearing capacity of the soil is 200 kN/sq.m. Use M20 concrete and Fe 415 steel. Detail the reinforcement. (14M)

(OR)

6. Design a combined trapezoidal footing for two columns A & B spaced 4.5M centre to centre. Column A is 300mm X 300mm in size and transmits a load of 700kN. Column B is 350mm X 350mm size and carries a load of 1000kN. The maximum length of footing is restricted to 7.2 metres only. The safe bearing capacity of a soil may be taken as 150kN/sq.m. Use M20 grade of concrete and Fe415 steel. (14M)

UNIT – IV

7. Design a cantilever retaining wall to retain horizontal earthen embankment of height 4m above the ground level. The earthen backfill is having a density of 18 kN/m^3 and an angle of internal friction as 30º. The safe bearing capacity of the soil is 180 kN/m^3. The coefficient of friction between soil and concrete is assumed to be 0.45. Use M20 concrete and Fe 415 steel. (14M)

(OR)

8. Design a T-shaped cantilever retaining wall to retain earth embankment 3.5m high above the ground level. The embankment is surcharged at an angle of 20º to the horizontal. The unit weight of the earth is 17N/m^3 and its angle of repose is 30º. The safe bearing capacity of a soil may be taken as 150kN/m2 at a depth of 1.2m below the ground. The coefficient of friction between concrete & soil may be taken as 0.60. Use M20 grade of concrete and Fe415 Grade Steel. (14M)

UNIT-V

9. Design a circular water tank with a flexible base for 1,00,000 liter capacity .The depth of water in the tank is 5m. Use M25 concrete and Fe 415 steel. (14M)

(OR)

10. Design a rectangular water tank of size 2m x 5m x 3m, resting on the ground. Bearing capacity of soil may be taken as 130 kN/m^2 . Use M25 concrete and Fe 415 steel. (14M)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: STRUCTURAL ANALYSIS - II

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Determine the static and kinematic indeterminacies of the two pin jointed trusses as shown in fig 1a & 1b   (14M)
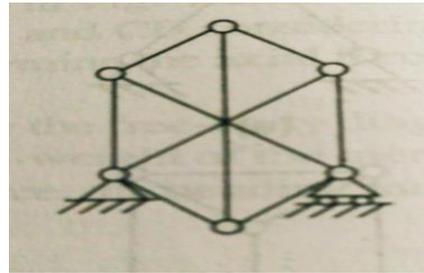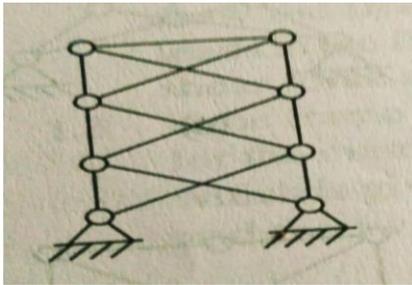
(OR)

2. A pin jointed framed structure is loaded as shown in fig below. Calculate the forces in all members. Take length of each member as 3m.Cross sectional area 500×10^{-6} m^2 and $E=200 \times 10^6$ KN/m^2.   (14M)
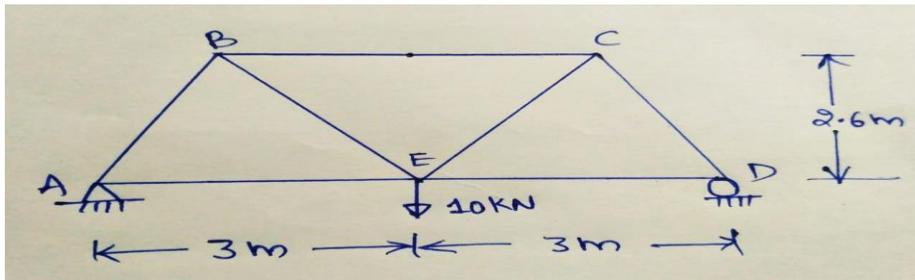
UNIT – II

3. A uniformly distributed load of 5KN/m covers left half of the span of three hinged parabolic arch, span 30m and rise 8m. Find the support reactions. Find the normal thrust and radial shear at 5m from the left support?   (14M)

(OR)

4. A two hinged symmetrical parabolic arch of span 30m and central rise 6m carries a point load of 40KN at a distance of 5m from the left support. Find the horizontal thrust at each support. Also find the maximum bending moment.   (14M)

UNIT – III

5. Two point loads 40KN and 60KN spaced 3m apart with 40KN load passing over a simply supported beam of span 16m from left to right. Determine the maximum B.M and SF at a section 4m from left support. Also determine absolute max. BM and SF.   (14M)

(OR)

6. A uniformly distributed load of intensity 20KN/m covering a length of 3m passes a girder of span 10m. Find the max SF and BM at section 4m from left support. Also find the absolute max SF and BM.   (14M)

UNIT – IV

7. An uniformly distributed load of intensity 50KN/m longer than span over a girder of 40m span using Influence line diagram for SF and BM. Determine maximum SF and BM at a section 16m from left support. Also determine the absolute maximum SF and absolute max BM   (14M)

(OR)

8. Determine the maximum forces in the members CE, DE and DF of the warren truss shown in fig using influence line diagram due to dead load of 10KN/m covering entire span and moving load of 20KN/m longer than span.   (14M)
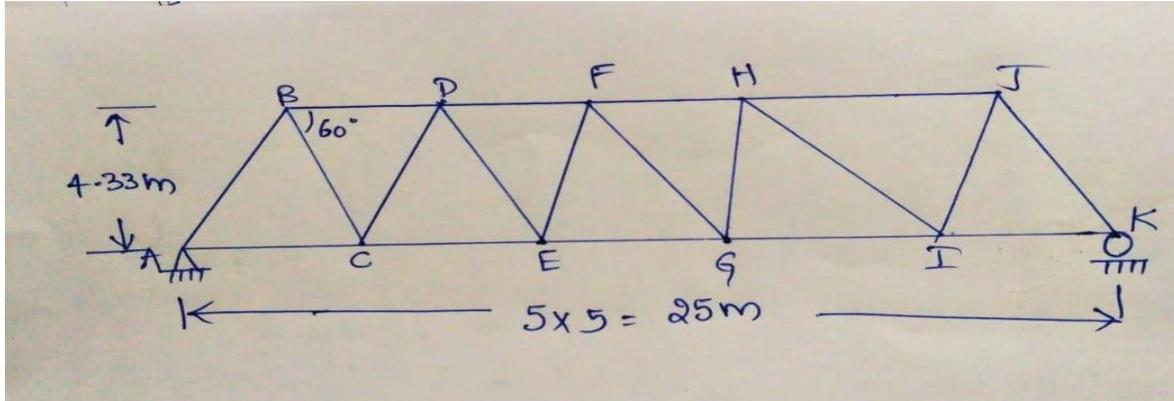
UNIT-V

9. Analyze the continuous beam shown in fig by using flexibility method. Also draw BMD & SFD. Assume EI is constant   (14M)
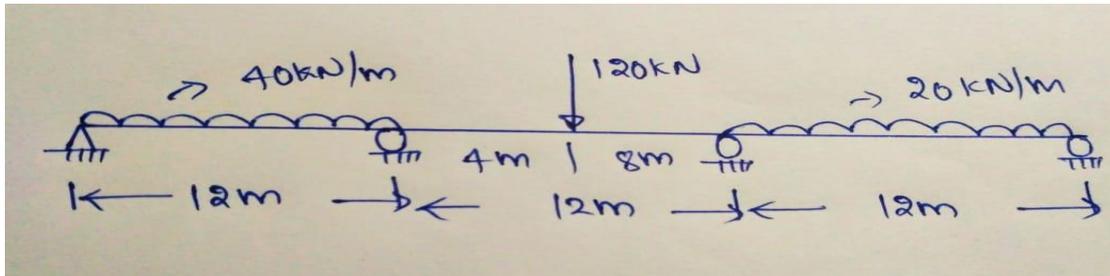
(OR)

10. Analyze the continuous beam shown in fig using stiffness method. Also draw BMD & SFD. Assume EI is constant   (14M)
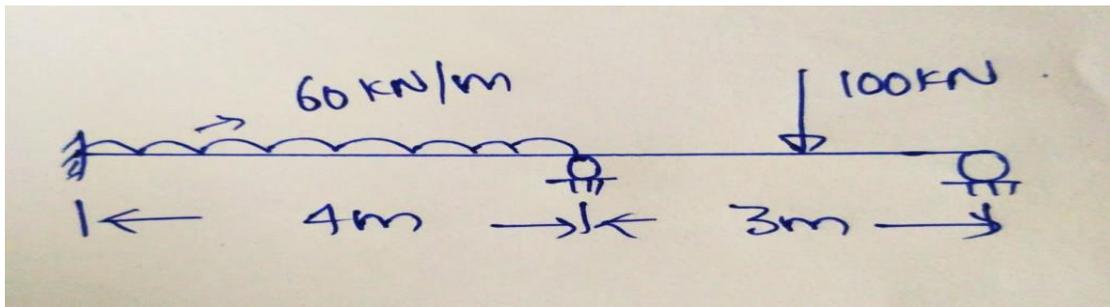
K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (EEE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: POWER QUALITY

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Define power quality? Explain the reasons for increased concern in power quality.	7M
	(b)	What are the responsibilities of the suppliers and users of electric power? Explain	7M

(OR)

2.	(a)	Explain briefly about ITIC curve	7M
	(b)	Write the various IEEE and IEC power quality standards	7M

UNIT – II

3.	(a)	Discuss the sources of sag and interruptions	7M
	(b)	Discuss how transients affect the power quality	7M

(OR)

4.	(a)	Discuss briefly about outages due to variation in voltage	7M
	(b)	Discuss briefly about the conventional devices used for voltage regulation	7M

UNIT – III

5.	(a)	Distinguish the differences among the following (i)Voltage distortion and Current distortion (ii)Harmonics and Transients	7M
	(b)	Briefly explain about Harmonic Indices	7M

(OR)

6.	(a)	Explain the procedure of evaluating Total Harmonic Distortion.	7M
	(b)	What are the various devices for controlling harmonic distortion? Explain briefly about them.	7M

UNIT – IV

7.	(a)	Discuss briefly about the process of benchmarking power quality.	7M
	(b)	Explain how the monitoring location is chosen for monitoring power quality?	7M

(OR)

8.	(a)	What are the various instruments used for measuring power quality.	7M
	(b)	Discuss the process of assessing the power quality from measured data	7M

UNIT-V

9.		What do you mean by custom power device? List Various types of custom power devices and also discuss the differences among them. Give the need of custom power devices.	14M

(OR)

10.	(a)	Explain the following (i)Solid State Current Limiter (ii)Solid State Transfer Switch	7M
	(b)	Give the principle of operation of UPQC.	7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B.Tech. VII Sem (EEE - R15) Regular & Supple Examinations of OCT/NOV 2019

SUB: ELECTRICAL DISTRIBUTION SYSTEMS

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
**All questions carry Equal Marks.**

UNIT - I

1. (a) Determine the relationship between the load factor and the loss factor for the two different cases when: (i) Load is steady. (ii) For very short-lasting loads.   8M

   (b) Discuss the effect of load factor on the cost of generation in a power system.   6M

(OR)

2. (a) Describe following terms (i). Coincidence Factor (ii) Contribution Factor (iii) Utilization Factor (iv) Plant capacity factor .   8M

   (b) Discuss the characteristics of different loads.   6M

UNIT – II

3. (a) Explain how the rating of distribution substation can be calculated by taking a general case with 'n' number of feeders.   8M

   (b) A DC two-wire distributor, 500 m long and fed at one end is shown in below Fig. The total resistance of the distributor is 0.02 Ω. Determine the voltage at the fed end F when the voltage at the far end R is 220 V.   6M

(OR)

4. (a) List various design and operational aspects affecting primary feeder loading and voltage levels.   7M

   (b) Discuss advantages and disadvantages of radial and loop type primary feeders.   7M

UNIT – III

5. (a) Discuss different bus bar arrangements used in substations with their merits and demerits.   7M

   (b) Explain the rules for ideal location of substation.   7M

(OR)

6. (a) Explain the classification of substations according to design.   8M

   (b) Compare the four and six feeder patterns of substation service area if they are thermally loaded.   6M

UNIT – IV

7. (a) What are the causes for low power factors in a distribution system?   7M

   (b) Discuss the methods to improve power factor.   7M

(OR)

8. (a) Explain the procedure employed to determine the best capacitor location.   8M

   (b) Discuss about the manual method of solution for radial networks.   6M

UNIT-V

9. (a) Discuss the communication requirements for distribution system automation.   7M

   (b) Discuss the role of geographical information system in distribution system automation.   7M

(OR)

10. (a) Explain the SCADA system for distribution system automation.   7M

    (b) Discuss about consumer information service ((CIS) and automatic meter reading (AMR) in detail.   7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (EEE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: SWITCH GEAR & PROTECTION

Time : 3 Hours   Max. Marks: 70
Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain about horn gap and multi gap lightning arresters with diagrams?	7M)
	(b)	Explain in detail about the insulation coordination?	7M)

(OR)

2.	(a)	Discuss and compare the various methods of neutral earthing	7M)
	(b)	Differentiate between surge diverter and surge absorber. Also explain the characteristics of an ideal surge diverter	(7M)

UNIT – II

3.	(a)	Explain how the arc is formed and maintained between the contacts of a circuit breaker. What are the different methods of arc quenching	(7M)
	(b)	With neat diagram explain minimum oil circuit breaker	(7M)

(OR)

4.	(a)	Derive an expression for restriking voltage and RRRV in terms of system voltage, inductance and capacitance	(7M)
	(b)	With a neat diagram, explain the construction and working of vacuum circuit breaker	(7M)

UNIT – III

5.	(a)	What are the various over current protective schemes? Why IDMT relays are widely used for over current protection.	(7M)
	(b)	Describe briefly some important types of electromagnetic attraction relays.	(7M)

(OR)

6.	(a)	Compare the R-X characteristics of (i) impedance relay (ii) mho relay (iii) reactance relay. Also give their applications?	(7M)
	(b)	Write short notes on (i) Amplitude comparator (ii) Phase Comparators	(7M)

UNIT – IV

7.	(a)	Why restricted earth fault protection is provided to alternators though it does not provide protection against earth fault to the complete winding? What is the justification of providing this protection?	(7M)
	(b)	A 3 phase,11 kV,15,000 kVA star connected alternator has differential protection The neutral is earthed through a resistance of 8 ohms. The relay operates for out of balance of 18 % full load. Calculate percentage of winding unprotected against ground fault?	(7M)

(OR)

8.	(a)	With the help of neat sketches explain the protections of a star –delta power transformer, against the phase to phase fault condition	(7M)
	(b)	A 3-phase, 11 / 220 KV Delta – star connected transformer is protected by differential protection. The current transformer connected on high voltage side is having a ratio of 300 / 5 A. Find the ratio of current transformer connected on the low voltage side also draw the connection diagram?	(7M)

UNIT-V

9.		Discuss the time graded over current protection for (i) Radial feeders (ii) Ring main system	(14M)

(OR)

10.	(a)	Describe the three zone distance relay protection of the line using impedance relays	(7M)
	(b)	Explain about the current graded system of protection and its disadvantages?	(7M)

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B.Tech. VII Sem (EEE - R15) Regular & Supple Examinations of OCT/NOV 2019

SUB: HVDC TRANSMISSION

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Discuss the economic and technical considerations of HVDC transmission.	6M
	(b)	Explain the types of DC links in HVDC transmission.	4M
	(c)	Draw the layout of a HVDC converter station.	4M

(OR)

2.	(a)	Explain the advantages of HVDC transmission over EHV-AC transmission for transmitting power from point to point.	6M
	(b)	Explain the applications of HVDC transmission.	4M
	(c)	Explain the factors influencing the choice of voltage level for HVDC Power transmission.	4M

UNIT – II

3.	(a)	Draw and explain the converter bridge characteristics of rectifier and inverter configurations from its equivalent circuits.	6M
	(b)	Draw a schematic diagram of a 12 pulse converter circuit, AC current waveform and list the different modes of operation.	8M

(OR)

4.	(a)	Draw a schematic diagram of a 6 pulse converter circuit and from fundamentals derive the expression of voltage for the operation of converter as a rectifier and inverter, considering gate control with relevant waveforms.	10M
	(b)	Elucidate the significance of pulse number for a converter.	4M

UNIT – III

5.	(a)	On what factors does the flow of power in a HVDC line depend? Explain.	4M
	(b)	Draw converter controller characteristic and explain why it is desirable to have current control at rectifier station and CEA control at inverter station.	10M

(OR)

6.	(a)	How does the power flow in a DC line be reversed? Explain.	4M
	(b)	Explain the principle of DC link control and derive the expression for current in a DC link.	10M

UNIT – IV

7.	(a)	Explain the causes of over voltages on DC side of converter and over voltages due to AC side line faults. How are they minimized?	8M
	(b)	Explain the operation of a typical DC circuit breaker.	6M

(OR)

8.	(a)	Explicate over current protection in a DC line.	6M
	(b)	Elucidate the following with respect to HVDC Conversion/Transmission. (i) Surge arresters (ii) Smoothing reactors	8M

UNIT-V

9.	(a)	Explain the working of band-pass filter used in HVDC systems. Explain the term detuning and state its importance in the design of filters for HVDC systems.	8M
	(b)	Elucidate the ill effects of harmonics on the performance and operation of HVDC Converter station and Transmission system.	6M

(OR)

10.	(a)	Explain the design criteria of AC Filters.	7M
	(b)	What do you mean by harmonic instability? Explain.	7M

B.Tech. VII Sem (EEE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: ADVANCED CONTROL SYSTEMS

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Explain the procedure for the design of Lag compensator using Bode plot.   (7M)
    (b) Explain the effect of PI, PI, and PID controller in the performance of the system.   (7M)

(OR)

2. Draw the bode plot for a UFB system   (14M)

    $G(S)$ = K/ S(S+1)(1+0.5S). Design a suitable compensation network so that the compensated system will have a velocity error co-efficient Kv=5 and phase margin is 350.

UNIT – II

3. (a) Define the terms state space, state variable and sate model. What are the advantages of state space representation   (7M)
    (b) Derive state model of a field controlled dc servo motor.   (7M)

(OR)

4. (a) Construct a state model for a system characterized by differential equation   (7M)
    dy3/dt + 6 dy2/dt + 11 dy/dt + 6y + u = 0
    Give the block diagram representation of the state model.
    (b) i) Define the controllability and observability.   (7M)
    ii) The state model of a system is given by
    $X^* = AX+BU$ and $Y=CX$
    Where A = $\begin{bmatrix} -0.5 & 0 \\ 0 & -2 \end{bmatrix}$;   B= $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$ and   C = $\begin{bmatrix} 0 & 1 \end{bmatrix}$
    Check the system whether it is controllable or not.

UNIT – III

5. (a) Write the design steps for pole placements   (7M)
    (b) Briefly explain full order and reduced order observers   (7M)

(OR)

6. (a) Write the properties of state transition matrix.   (7M)
    (b) A linear time-invariant system is characterized by homogeneous state equation,   (7M)

    $X^* = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} x1 \\ x2 \end{bmatrix}$; compute the solution of the homogeneous equation, assuming the initial state vector.   X0= $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$

UNIT – IV

7. (a) List out the common Non-linearities that are present in control systems and briefly   (7M)
    explain them with diagrams ?
    (b) What are singular points? Describe them with relevant equations and sketches.   (7M)

(OR)

8. (a) Explain the stability analysis with describing function method   (7M)
    (b) Derive the describing function of dead –zone Non-Linearity.   (7M)

UNIT-V

9. (a) State and explain the two theorems of Liapunov ?   (7M)
    (b) Explain the stability of a linear system by direct method of Liapunov.   (7M)

(OR)

10. (a) Explain krasovskiis method.   (7M)
    (b) Explain variable gradiant method.   (7M)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Regular & Supple. Examinations of October/November 2019

SUB: Management Science (EEE & ECE)

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. How is management different from administration? Write about functions of   14M
    management in business?

(OR)

2. Managers have certain guidelines so that they can take decisions and can act.   14M
    Examine the different principles used by a manager in organization?

UNIT – II

3. What is meant by corporate planning? Illustrate the corporate planning process by   14M
    diagram?

(OR)

4. Define the strategic management? Make a note on strategic formulation Vs   14M
    strategic implementation?

UNIT – III

5. Explain how the job evaluation used to establish the worth of jobs in a job   14M
    hierarchy?

(OR)

6. Examine the steps involved in the purchase procedure in inventory management?   14M

UNIT – IV

7. What is operational management? Define the production methods and give   14M
    example of each.

(OR)

8. Is work study considered as a tool of improving productivity? Substantiate your   14M
    answer with examples.

UNIT-V

9. An R&D project has a list of tracks to be performed whose time estimates are given in the table as follows: **14M**

Activity I J	Activity Name	T_o	T_m (in days)	T_p
1-2	A	4	6	8
1-3	B	2	3	10
1-4	C	6	8	16
2-4	D	1	2	3
3-4	E	6	7	8
3-5	F	6	7	14
4-6	G	3	5	7
4-7	H	4	11	12
5-7	I	2	4	6
6-7	J	2	9	10

a) Draw the project network
b) Find the critical path
c) Find the probability that the project is completed in 19 days. If the probability is less than 20% find the probability of completing in 24 days.

(OR)

10. (a) Phases of project management   7M
    (b) Cost classification   7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ECE - R15) Regular & Supple Examinations of OCT/NOV - 2019
SUB: EMBEDDED REAL TIME OPERATING SYSTEMS

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What are the various application areas of Embedded systems?	7M
	(b)	Explain Operational Quality attributes of Embedded system.	7M

(OR)

2.	(a)	Discuss about Sensors and Actuators.	7M
	(b)	What are the skills required for the embedded system designer.	7M

UNIT – II

3.	Explain the computational models in Embedded Systems	14M

(OR)

4.	(a)	Explain the hardware software tradeoffs	7M
	(b)	Explain the electronic design automation tools	7M

UNIT – III

5.	(a)	Describe about Serial Bus communication Protocols	7M
	(b)	Explain about Wireless and Mobile system protocols	7M

(OR)

6.	(a)	Explain network protocols in embedded systems	7M
	(b)	Explain watchdog timer and real time clock.	7M

UNIT – IV

7.	(a)	Discuss the Multi-Tasking and Multi-Threading.	7M
	(b)	Explain in detail about Task Synchronization.	7M

(OR)

8.		Explain about the Interrupt Routines in RTOS Environment and Handling of Interrupt Source Calls.	14M

UNIT-V

9.	With neat diagram explain embedded system for an Adaptive cruise control system in a car.	14M

10.	With a neat diagram explain Mobile Phone Software for Key Inputs.	14M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ECE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: DIGITAL IMAGE PROCESSING

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Explain the fundamental steps involved in digital image processing.   7M

   (b) Explain the following relationship between pixels

      i)   Connectivity   7M

      ii)   Distance measures

(OR)

2. (a) Explain about a simple image model in image processing.   7M

   (b) Explain in detail the following points

      i)   Uniform sampling and Quantization   7M

      ii)   Non-uniform sampling and Quantization

UNIT – II

3. State and prove the following 2D DFT properties   14M

      i)   Translation in spatial domain

      ii)   Scaling

      iii)   Average value

(OR)

4. (a) Explain about Walsh transform.   7M

   (b) With mathematical expressions, explain the Slant transform and how it is useful in Image processing.   7M

UNIT – III

5. Briefly explain about image enhancement using point processing techniques.   14M

6. Explain how image sharpening is done in frequency domain.   14M

UNIT – IV

7. (a) Explain about Weiner filtering.   7M

   (b) Discuss in detail about the edge linking using local processing.   7M

(OR)

8. (a) Explain the method of Constrained Least Squares filtering used for image restoration.   7M

   (b) Explain the different thresholding operations used in image segmentation.   7M

UNIT-V

9. (a) Discuss the loss less predictive coding with the help of block diagram.   7M

   (b) Consider the probabilities P(A)=0.5, P(B)=0.25, P(C)=0.25. Encode the sequence "BACA" using Arithmetic coding.   7M

(OR)

10. (a) Explain with a block diagram about transform coding system.   7M

    (b) Explain about run-length coding with an example.   7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ECE - R15) Regular & Supple Examinations of OCT/NOV- 2019
SUB: OPTICAL COMMUNICATIONS

Time : 3 Hours   Max. Marks: 70
Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Explain what is meant by a graded index optical fiber, giving an expression for the possible refractive index profile. Using simple ray theory concepts, discuss the transmission of light through the fiber.   **10M**

   (b) Indicate the major advantages of graded index type of fiber with regard to multimode propagation.   **4M**

(OR)

2. (a) Define the relative refractive index difference for an optical fiber and show how it may be related to the numerical aperture.   **7M**

   (b) A step index fiber with a large core diameter compared with the wavelength of the transmitted light has an acceptance angle in air of 22° and a relative refractive index difference of 3%. Estimate the numerical aperture and the critical angle at the core–cladding interface for the fiber.   **7M**

UNIT – II

3. Discuss the following w.r.t Fiber Optic cables:

   i. Cable Structures   ii. Indoor cable designs   iii. Outdoor cable designs   **14M**

(OR)

4. (a) A multimode step index fiber has a numerical aperture of 0.3 and a core refractive index of 1.45. The material dispersion parameter for the fiber is 250 ps nm^{-1} km^{-1} which makes material dispersion the totally dominating chromatic dispersion mechanism. Estimate   **7M**

   (i)   the total rms pulse broadening per kilometer when the fiber is used with an

          LED source of rms spectral width 50 nm and

   (ii)   the corresponding bandwidth–length product for the fiber.

   (b) The beat length in a single-mode optical fiber is 9 cm when light from an injection laser with a spectral linewidth of 1 nm and a peak wavelength of 0.9 μm is launched into it. Determine the modal birefringence and estimate the coherence length in this situation. In addition calculate the difference between the propagation constants for the two orthogonal modes and check the result.   **7M**

UNIT – III

5. (a) List and explain some of the principle requirements of a good connector design.   **6M**

   (b) Explain different optical fiber connector types. Also, address single mode connector coupling losses.   **8M**

(OR)

6. (a) With the help of diagrams, explore three fundamental types of mechanical misalignments that can occur between two joined fibers. 7M

(b) Illustrate and explain, the examples of several possible lensing schemes used to improve optical source-to-fiber coupling efficiencies. 7M

UNIT – IV

7. (a) Discuss in detail the internal quantum efficiency and the various factors that can reduce this efficiency. 8M

(b) List and explain the advantages and disadvantages of LASER diode. 6M

(OR)

8. (a) With schematic representation explain the working principle of PIN photo detector. 7M

(b) Outline the common LED structures for optical fiber communications, discussing their relative merits and drawbacks. In particular, compare surface- and edge-emitting devices. Comment on the distinction between multimode and single-mode devices. 7M

UNIT-V

9. (a) Illustrate a schematic diagram of a typical optical receiver and then explain its three basic stages. 7M

(b) Give an account of Fiber optic link power budget with an example. 7M

(OR)

10. (a) Write down and explain the link design equations in a point to point communication link, based on power budget and rise time budget considerations. 8M

(b) Discuss with the aid of suitable diagram the measurement of dispersion in optical fibers. 6M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ECE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What is the method used to calculate the errors in an instrument?	8M
	(b)	Explain the terms	6M

   (i)Accuracy   (ii)Sensitivity   (iii)Lag   (iv)Fidelity

(OR)

2.	(a)	Describe the function of the DC-Voltmeter and explain their operation?	6M
	(b)	Draw the Block Schematic of AF Wave analyzer and explain its principle and Working?	8M

UNIT – II

3.		What is the use of digital tachometer? Explain the working principle with a neat sketch.	14M

(OR)

4.	(a)	What is digital voltmeter? List the different types.	4M
	(b)	Explain any one type of digital voltmeter with a neat diagram	10M

UNIT – III

5.	(a)	Draw the block Diagram of a Dual Trace CRO and explain it?	8M
	(b)	Explain the logic of a time base of a frequency counter?	6M

(OR)

6.	(a)	Discuss the storage oscilloscope with a neat block diagram?	10M
	(b)	State the standard specification of CRO	4M

UNIT – IV

7.	(a)	Explain the Schearing bridge with neat diagram.	7M
	(b)	A Maxwell bridge is used to measure inductance and impedance. The bridge constants at balance are: R1 = 235 kW, C1 = 0.012 mF, R2 = 2.5 kW and R3 = 50 kW. Find the series equivalent of the unknown impedance.	7M

(OR)

8.	(a)	Draw the Andersons Bridge Circuit and derives the expression for the unknown element at balance?	9M
	(b)	What are the applications of wheat stone bridge and explain its limitations?	5M

UNIT-V

9.	(a)	What is transducer? Write the classifications of transducers?	4M
	(b)	Write short notes on resistive transducer?	5M
	(c)	Explain briefly about poissons ratio?	5M

(OR)

10.	(a)	What parameters should be considered in selecting a transducer?	8M
	(b)	Explain working of semiconductor strain gauge and what are its specific advantages?	6M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ECE - R15) Regular & Supple Examinations of OCT/NOV - 2019
SUB: VLSI DESIGN

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) With the help of neat diagrams explain n-well fabrication process for CMOS?   7M

    (b) List the advantages and drawbacks of CMOS technology?   7M

                                            (OR)

2. With the help of neat diagrams explain Bi-CMos fabrication process?   14M

UNIT – II

3. (a) Derive the relationship between V_{ds} and I_{ds} in Mos Transistors   7M

    (b) Draw the circuit diagram of NMOS inverter and explain its operation   7M

                                            (OR)

4. (a) Derive the equation for Threshold Voltage of MOS transistor   7M

    (b) Design two input CMOS NAND gate and explain its operation   7M

UNIT – III

5. Draw the stick and Layout diagram of a two input CMOS NOR gate   14M

                                            (OR)

6. (a) In- Brief list various Layout design rules   7M

    (b) Explain the significance of Scaling of MOS device   7M

UNIT – IV

7. (a) Write short notes on Sheet Resistance and Wiring Capacitance   7M
    (b) Explain about Switch Logic in Gate level design   7M

                                            (OR)

8. Explain the design procedure of Counters in Subsystem design   14M

UNIT-V

9. With the help of neat diagram explain the architecture of FPGA   14M

                                            (OR)

10. Write brief notes on
    (a) Chip level Test Techniques

    (b) System-level Test Techniques   14M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ME - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: RAPID PROTOTYPING

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Discuss the impact of rapid prototyping method on Industry?   14M

(OR)

2. Discuss the potential application of rapid prototyping in various industries and   14M
    deliberate the cost-benefit criteria analysis for the same?

UNIT – II

3. Describe the various process parameters and their influence on the prototype   14M
    which is made by Stereolithography system?

(OR)

4. Explain the data preparation and machine interfacing system in Stereolithography   14M
    process?

UNIT – III

5. Discus the various process parameters and their influence on the prototype which is   14M
    made by Fusion Decomposition Modeling system?

(OR)

6. Define solid ground curing? Explain the principle and operation of the same with   14M
    suitable sketch?

UNIT – IV

7. Describe the advantages, limitation and application of laminated object manufacturing?   14M

(OR)

8. Explain the principle and operation of 3D printer? Mention its advantages?   14M

UNIT-V

9. Describe the process of spin casting with vulcanized rubber mold?   14M

(OR)

10. Describe the significance of the following? a) Pro metal rapid tooling b) In-direct hard   14M
    tooling c) Copy milling

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ME - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	Explain the types of production system.	14M

(OR)

2.	What is productivity and give its importance. Describe how to measure the productivity	14M

UNIT – II

3.	Explain the factors that influence sales forecasting.	14M

(OR)

4.	(a)	What are the objectives of Aggregate planning	7M
	(b)	Differentiate between 'Pure' and 'Mixed Strategies in Aggregate Planning	7M

UNIT – III

5.	Give the Classification of layout design procedures.	14M

(OR)

6.	What are the disciplines involved in Facilities Planning (FP) and list the applications of Facilities Planning (FP)	14M

UNIT – IV

7.	The project consist of the following activities and time estimates	14M

Activity	Least time (t_o) in days	Greatest time (t_p) in days	Most likely time (t_m) in days
1-2	3	15	6
1-3	2	14	5
1-4	6	30	12
2-5	2	8	5
2-6	5	17	11
3-6	3	15	6
4-7	3	27	9
5-7	1	7	4
6-7	2	8	5

Construct the network. Determine the expected task time and the critical path.

(OR)

8.	Difference between PERT and CPM and what are the Steps in using network techniques	14M

UNIT-V

9.	Consider two machines and six jobs flow shop scheduling problem. Using Johnson's algorithm, obtain the optimal sequence which will minimize the makespan.	14M

Job	Time taken by the machines	
	1	2
1	5	4
2	2	3
3	13	14
4	10	1
5	8	9
6	12	11
sum	50	42

(OR)

10.	State the Objectives of scheduling and Discuss about Forward scheduling and backward scheduling	14M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ME - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: INSTRUMENTATION & CONTROL SYSTEMS

Time : 3 Hours   Max. Marks: 70
Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Explain the following terms: a) Range and span b) Resolution c) Calibration d) Sensitivity.   8M

   (b) What is measurement system and explain its elements?   6M

(OR)

2. Sketch and explain with a block diagram generalized measurement system and its elements with an example.   14M

UNIT – II

3. Discuss the application areas in which low pressures are maintained. List out various indirect methods for measurement of low pressure and explain any to methods.   14M

(OR)

4. (a) Explain the concept of pressure measurement using diaphragm gauges?   7M

   (b) Explain the various principle of temperature measurement.   7M

UNIT – III

5. (a) Explain the working of mechanical tachometer with a neat sketch   10M

   (b) State the difference between vibrometer and accelerometer   4M

(OR)

6. (a) What are bubbler level indicators? Describe their working?   7M

   (b) Describe the working principle of stroboscope with a neat sketch?   7M

UNIT – IV

7. (a) What are different types of strain gauges? Explain briefly?   7M

   (b) What is gauge factor? Explain the working of electrical strain gauges?   7M

(OR)

8. (a) Distinguish between bonded and unbounded type of strain gauge?   7M

   (b) Explain how strain gauges can be used for measurement of bending stress?   7M

UNIT-V

9. (a) Discuss about the measurement of humidity using sling psychrometer.   7M

   (b) Explain the working principle in torsion meter?   7M

(OR)

10. (a) How is a hydraulic cell used for force measurement? Explain.   7M

    (b) What are the different types of control system? Explain term with block diagrams?   7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B.Tech. VII Sem (ME - R15) Regular & Supple Examinations of OCT/NOV - 2019

SUB: FINITE ELEMENT METHODS

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a)   Discuss the types of elements based on geometry.   7M
    (b)   Explain the general description of Finite Element Method.   7M

(OR)

2.   Discuss the difference between the Ritz technique and the Galerkin technique   14M

UNIT – II

3.   Find the deflection at the centre of the simply supported beam of span length L with the central point load 'P' using two term trial function from trigonometric series.   14M

(OR)

4. (a)   Distinguish between essential and natural boundary conditions with suitable examples.   4M
    (b)   Explain the shape functions for a 3 node bar element.   10M

UNIT – III

5.   Derive the element stiffness matrix for a beam element and also derive the shape and deflection for a cantilever beam   14M

(OR)

6.   For the two-bar truss shown in figure below, determine the displacements of nodes, stresses and reactions in elements. Distance from node (1,2) = 500 mm and node (1,3) = 300 mm. Take E = 70 Gpa, A = 200 mm^2 for both elements.   14M
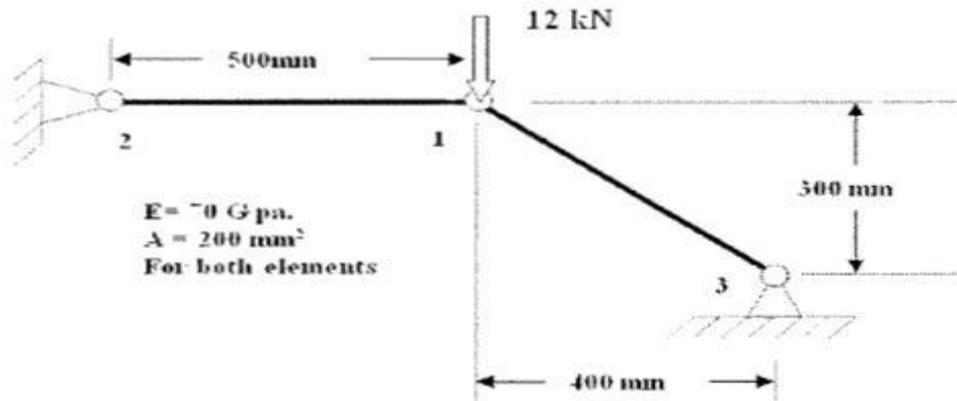
UNIT – IV

7.   Determine the shape functions and stiffness matrix equations for a constant strain triangular element in terms of natural coordinate system.   14M

(OR)

8.   Discuss the importance of Isoparametric concept used in FEM. Name the Isoparametric elements. How is 'assembly' done in Isoparametric formulation?   14M

UNIT-V

9.   Derive the element conductivity matrix and load vector for solving 1-D heat conduction problems, if one of the surface is exposed to a heat transfer coefficient of 'h' and ambient temperature of 'T'.   14M

(OR)

10. (a)   Discuss in detail about 2D heat conduction in composite slabs using FEA.   7M
    (b)   Determine the temperature distribution along a circular fin of length 4 cm and radius 0.75 cm. The fin is attached to boiler, whose wall temperature 150 ^{0}C and the free end is open to the atmosphere. Assume Tα = 40 ^{0}C, h = 10 W/cm^2 / ^{0}C, k = 70 W/cm ^{0}C   7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ME - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: METROLOGY

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Find the values of allowance and tolerance for the hole and shaft assembly for the following   7M
       dimensions of mating parts:

       Hole: $25^{+0.05}_{+0.00}$ Shaft : $25^{-0.02}_{-0.02}$

   (b) Depending on the relation between the shaft and the hole classify different types of fits   7M

(OR)

2. (a) Classify different types of tolerances with an example for each   6M

   (b) Discuss about Hole basis system and shaft basis system   8M

UNIT – II

3. (a) Differentiate between Line and End standard   6M
   (b) Explain about slip gauges and the procedure for wringing the slip gauges   8M

(OR)

4. (a) Explain the working principle of Bevel Protractor   7M

   (b) Explain the construction of sine bar and derive the expression to find the taper angle   7M

UNIT – III

5. (a) Explain the construction and working principle of Tool Maker's Microscope   7M
   (b) Briefly explain about optical flat its uses and limitations   7M

(OR)

6. (a) With a neat sketch explain about NPL gauge Interferometer   8M
   (b) Describe the straight edge method for measuring the straightness of a surface.   6M

UNIT – IV

7. (a) What is a screw thread? Explain the terminology used for screw thread measurement.   6M
   (b) Explain the different pitch errors with neat sketches. State their causes   8M

(OR)

8. Describe the following methods for measuring the effective diameter of the screw   14M
   thread.
       a) Thread micrometer method
       b) One wire method

UNIT-V

9. (a) Explain Reed type comparator with a neat sketch   7M
   (b) Explain Sigma comparator its advantages limitations   7M

(OR)

10. (a) Explain solex pneumatic gauges   7M
    (b) Explain the working principle of electrical comparators   7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (ME - R15) Regular & Supple End Examinations of OCT/NOV 2019
SUB: CAD/CAM

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	Define CAD and Explain CAD Process with the help of a block diagram?	14M

(OR)

2.	(a)	Discuss any two types Hard copy devices with suitable diagrams.	7M
	(b)	Briefly describe the various types of storage devices used in computer?	7M

UNIT – II

3.	(a)	Explain Bresenham's line algorithms?	7M
	(b)	What is Clipping and give the details of polygon clipping with an example?	7M

(OR)

4.	What is meant by Transformation and Explain 2-D transformations with suitable examples?	14M

UNIT – III

5.	(a)	Explain clearly the wire frame modelling with neat sketch?	7M
	(b)	Briefly explain CSG with suitable Example?	7M

(OR)

6.	Describe the method of defining Bezier curve and explain characteristics of Bezier curves?	14M

UNIT – IV

7.	What is meant by a Part family in Group Technology and explain methods used in GT to form Part families? List out advantages of G.T?	14M

(OR)

8.	(a)	Explain MICLASS coding system in GT.	7M
	(b)	Define FMS and Explain types Flexibilities in FMS?	7M

UNIT-V

9.	(a)	Explain MRP with a block diagram?	7M
	(b)	What is Barcode and how it works?	7M

(OR)

10.	What is computer aided process planning? Discuss variant process planning in detail with an example?	14M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CSE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: INTERNET OF THINGS

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Define IoT? Explain about the Things in IoT?	7M
	(b)	Illustrate on the various characteristics of IoT?	7M

(OR)

2.	Briefly explain about the Logical Design of IoT?	14M

UNIT – II

3.	(a)	List and explain the different application areas of IoT? Explain about the Smart Irrigation using IoT	8M
	(b)	How IoT is used in Industries? Explain?	6M

(OR)

4.	How IoT is used in the protection of environment? Explain with example?	14M

UNIT – III

5.	(a)	Distinguish about IoT and M2M?	7M
	(b)	Explain about the Domain Model Specification?	7M

(OR)

6.	Explain about SDN and NFV for IoT with help of neat diagram and example?	14M

UNIT – IV

7.	(a)	Discussion about Various characteristics of Python?	7M
	(b)	Explain about the Python installation steps?	7M

(OR)

8.	(a)	Explain about Python Data Types and Data Structures?	8M
	(b)	Explain about the file handling in Python?	6M

UNIT-V

9.	Define an IoT device? Explain basic building blocks of an IoT device?	14M

(OR)

10.	(a)	Explain about the Raspberry Pi board with various components?	10M
	(b)	Write a Program for simple LED blink using Python?	4M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CSE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: COMPUTER GRAPHICS

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) List The Applications of Computer Graphics? Explain how Entertainment and Computer Art is used in Computer Graphics?   7M

   (b) What is the importance of Graphics in the area of Image processing?   7M

(OR)

2. (a) Describe and elaborate the types of Video Display Devices?   7M

   (b) Explain about the Graphics Input Devices and Hard-copy devices?   7M

UNIT – II

3. (a) Write down and explain the midpoint circle drawing algorithm?   7M

   (b) Explain about Scan Converting Ellipses?   7M

(OR)

4. (a) What is Pattern Filling?   4M

   (b) Write about Cohen – Sutherland line clipping algorithm?   10M

UNIT – III

5. (a) Write a detailed note on the basic two dimensional transformations   7M

   (b) Describe the Matrix Representations and Homogeneous coordinates   7M

(OR)

6. (a) What are the Advantages of Quadratic surfaces?   4M

   (b) Explain in detail about Parametric cubic curves?   10M

UNIT – IV

7. (a) Explain How to specifying an arbitrary 3D View?   7M

   (b) How to representing Solids and explain the Sweep and Boundary Representations?   7M

(OR)

8. (a) Define Reproducing color?   4M

   (b) Elaborate the different color models for Raster Graphics   10M

UNIT-V

9. (a) What is illumination? Explain the various types of illumination?   7M

   (b) Explain Gauraud shading technique and write the deficiencies in that method and how it os rectified using Phong shading technique   7M

(OR)

10. (a) What are the Basic rules of Animation?   4M

    (b) Describe the different types of Animation Languages and What are the methods of controlling Animation?   10M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CSE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: SOFTWARE TESTING

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.		List out various Dichotomies and explain.	14M
		(OR)	
2.	(a)	State and explain various kinds of predicate blindness with suitable examples	8M
	(b)	Discuss about Path instrumentation.	6M

UNIT – II

3.		Write the steps involved in Node Reduction Procedure. Illustrate all the steps with help of neat labeled diagrams	14M
		(OR)	
4.	(a)	Write about Data Flow Anomalies and explain how data flow testing will explore them	7M
	(b)	Write about Data Flow Testing and its Applications.	7M

UNIT – III

5.		Explain Nice and Ugly domains in detail?	14M
		(OR)	
6.		What is a decision table? How does it useful in testing? Explain with an example.	14M

UNIT – IV

7.	(a)	Differentiate Good state graphs and Bad state graphs.	8M
	(b)	What is state testing? Explain about impact of bugs in state testing.	6M
		(OR)	
8.	(a)	Define a transaction. Explain with an example	5M
	(b)	Explain about various Transactions flow junctions and mergers.	9M

UNIT-V

9.	(a)	Explain the matrix of a graph with example.	5M
	(b)	Explain about matrix of power in graphs.	9M
		(OR)	
10.		Write a Node Reduction algorithm in terms of Matrix operations.	14M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CSE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: ARTIFICIAL INTELLIGENCE

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What is AI Technique and Discuss with one example.	7M
	(b)	List the Characteristics of Problem in Production system with an example	7M

(OR)

2.	(a)	Explain about simulated annealing with an example.	7M
	(b)	AND-OR Graphs play crucial role in problem Reduction. Justify Your Answer	7M

UNIT – II

3.	(a)	Explain about Unification in Predicate Logic	7M
	(b)	Discuss about BFS in detail	7M

(OR)

4.	(a)	Discriminate Forward and Backward Reasoning	7M
	(b)	Explain in detail about Resolution in predicate logic.	7M

UNIT – III

5.	(a)	Discuss various logics for Nonmonotonic Reasoning	7M
	(b)	Explain in detail about JTMS	7M

(OR)

6.	(a)	Discuss about Bayesian Networks with an example	7M
	(b)	Explain about Dempster-Shafer Theory	7M

UNIT – IV

7.	(a)	Construct semantic net representations for the following i)pampeian(Marcus),Blacksmith(marcus) ii)Mary gave the green flowered vase to her favourite cousing	7M
	(b)	Demonstrate Slots as full fledged Objects wih an example	7M

(OR)

8.	(a)	Discuss about CYCL with an example	7M
	(b)	Explain about Syntactic-Semantic Spectrum of Representation	7M

UNIT-V

9.	(a)	Explain in detail about various components of the Natural Language Understanding process.	7M
	(b)	Explain in detail about knowledge acquisition in Expert system.	7M

(OR)

10.	(a)	Iterative Deeping plays crucial role in game playing. Justify Your Answer	7M
	(b)	List various spell checking techniques in Natural Language Processing	7M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CSE - R15) Regular & Supple Examinations of OCT/NOV - 2019
SUB: CLOUD COMPUTING

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Compare and contrast Grid Computing and Cloud Computing	7M
	(b)	Discuss in detail about various deployment models in cloud with example	7M

(OR)

2.	(a)	Explain in detail about high-performance computing	7M
	(b)	Define Cloud Computing. Elaborate advantages and disadvantages of cloud computing	7M

UNIT – II

3.	(a)	Explain the steps involved in managing cloud application	7M
	(b)	Discuss in detail about multi-tenancy and elasticity in cloud	7M

(OR)

4.	(a)	Discuss the procedure in which the stand alone applications are converted in to cloud applications	7M
	(b)	Write about intra cloud networking for public and private clouds	7M

UNIT – III

5.	(a)	Enumerate the differences between public cloud and private cloud.	7M
	(b)	Discuss in detail about the characteristics and sustainability of SaaS	7M

(OR)

6.	(a)	Explain the concept of Hybrid cloud with example	7M
	(b)	Write in detail about the implementation of PaaS	7M

UNIT – IV

7.	(a)	Discuss in detail about the installation and configuration of Manjarasoft Aneka	7M
	(b)	Elaborate on RackSpace Cloud API	7M

(OR)

8.	(a)	Explain about the cloud application development in force.com	7M
	(b)	Illustrate different perspectives of SaaS development	7M

UNIT-V

9.	(a)	Write about common trouble shooting and networking issues in cloud.	7M
	(b)	Explain the working procedure of salesforce.	7M

(OR)

10.		Elaborate on the storage and networking infrastructure within the data center	14M

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem (CSE - R15) Regular & Supple Examinations of OCT/NOV 2019
SUB: BIG DATA TECHNOLOGIES

Time : 3 Hours   Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Define Big Data. Explain dimensions of big data.	6M
	(b)	What are the sources of big data? Explain why Big data is important?	8M

(OR)

2.	(a)	Define Hadoop system and compare to other systems.	8M
	(b)	Explain about apache Hadoop ecosystem.	6M

UNIT – II

3.	(a)	Explain designing steps and concepts of HDFS.	10M
	(b)	Why Is a Block in HDFS So Large?	4M

(OR)

4.	(a)	Discus anatomy of file read in HDFS. And write a java program to read a file from Hadoop file system.	8M
	(b)	Illustrate Replica placement in HDFS.	6M

UNIT – III

5.	(a)	Define Hadoop MapReduce. And analyzing the data by hadoop MapReduce with an example.	10M
	(b)	Explain usage of combiner function in Mapreduce.	4M

(OR)

6.	(a)	Discuss about managing configuration in Hadoop.	7M
	(b)	Write a java class for parsing weather records in NCDC format.	7M

UNIT – IV

7.		How Hadoop runs a MapReduce job with classic MapReduce framework? Explain with neat diagram.	14M

(OR)

8.	(a)	Explain how to prevent splitting by using TextInputFormat class?	7M
	(b)	Write a MapReduce program for transforming the weather data into SequenceFile format.	7M

UNIT-V

9.	(a)	Compared hive with traditional databases.	6M
	(b)	Explain the following: i) Primitive types ii) Complex types in HiveQL.	8M

(OR)

10.	(a)	Explain HBase installation.	7M
	(b)	Develop a web application using Web queries.	7M