

Q.P. Code: 252412**SET - 1**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: BRIDGE ENGINEERING (CE)

Time : 3 Hours

Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

Note: IRC, IS 456-2000 & IS 800 – 2007 Codes are permitted in the Examination Hall

UNIT - I			
1.	(a)	Discuss in detail about the various loads that should be considered for the design of bridges.	7M
	(b)	Write about the Highway Bridge Loading Standards.	7M
(OR)			
2.	(a)	Explain how the impact factor is calculated for various IRC loadings.	7M
	(b)	How dispersion of a load on slab deck is calculated in longitudinal and transverse directions of the tracked vehicle load and also wheeled load?	7M
UNIT – II			
3.		Design a Box Culvert having inside dimensions of 3 x 3 m. The culvert is subjected to a dead load of 10 kN/m ² and a live load of IRC Class “AA” tracked vehicles. Assume unit weight of soil to be 18 kN/m ² . The angle of repose of soil is 25°. Use M40 grade concrete and Fe500 grade steel. Consider the thickness of slab and walls as 200 mm.	14M
(OR)			
4.		Design a Box Culvert having inside dimensions of 4 x 4 m. The culvert is subjected to a dead load of 12 kN/m ² and a live load of IRC Class “AA” tracked vehicles. Assume unit weight of soil to be 18 kN/m ² . The angle of repose of soil is 35°. Use M35 grade concrete and Fe415 grade steel. Consider the thickness of slab and walls as 250 mm.	14M
UNIT – III			
5.		Explain about the effective width method for the design (only) of deck Slab Bridge of simply supported subjected to class AA tracked vehicles.	14M
(OR)			
6.		Design a reinforced concrete slab culvert for a National Highway to suit the following data: Carriage way - 7.5 m; Foot paths on either side - 1m; Clear span of the bridge - 7m Wearing coat thickness = 100 mm Width of bearing is 400mm; Live load : IRC class AA tracked vehicle Materials used: M30 grade of concrete, Fe500 HYSD bars Permissible stresses: σ_{cbc} is 8.5 MPa, $\sigma_{st} = 200$ N/mm ² Design RC Deck slab and sketch the details of reinforcement in longitudinal and cross-section of the slab.	14M

UNIT – IV

7.	Design a RCC T-beam bridge to suit the following data: Clear width of roadway : 7.5 m Span (c/c of bearings) : 15 m Live load : I.R.C. Class AA tracked vehicle Average thickness of wearing coat = 80 mm Concrete mix : M25 grade Steel : Fe415 grade HYSD bars Using Courbon's method. Design the deck slab, main girder and cross girders. Assume suitable data if any required.	14M
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(OR)

8.	Design the interior panels of slabs of a RCC T-beam bridge to suit the following data: Clear width of roadway : 7.5 m Span (c/c of bearings) : 12 m Live load : I.R.C. Class AA tracked vehicle Average thickness of wearing coat = 80 mm Concrete mix : M25 grade Steel : Fe415 grade HYSD bars	14M
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UNIT-V

9.	(a)	Write about the various forces acting on the piers.	7M
	(b)	Discuss about the various types of Wing Walls.	7M
(OR)			
10.	(a)	Explain the various design principles of Rocker & Roller Bearings.	8M
	(b)	List out different types of bearings that are used in bridges.	6M

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: QUANTITY SURVEYING AND VALUATION (CE)

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) Distinguish between the General and Detailed specifications. 5M
(b) Write about the detailed specifications of Reinforced Cement Concrete. 9M
(OR)
2. (a) List the different types of estimate. 4M
(b) Explain the method of estimating for any four main items of work. 10M

UNIT – II

3. (a) Prepare the rate chart for Half Brick Wall with 1 : 3 Cement Mortar. 7M
(b) Prepare the rate chart for 12 mm thick plastering with 1 : 3 Cement Mortar. 7M
(OR)
4. (a) Calculate the rate of Lime Concrete in Foundation with 40 mm gauge Brick Ballast... 7M
(b) Prepare the rate chart for 2.5 cm Cement Concrete Floor 1 : 2 : 4. 7M

UNIT – III

5. Estimate the cost of a masonry water tank from the given Fig. (1) 14M
(OR)
6. Estimate the quantities of following item of works from the Fig. (2). (i) Earthwork in Excavation in foundation, (ii) Lime concrete in foundation, (iii) Ist class brickwork in cement mortar, (iv) 2.5 cm c.c. damp proof course. 14M

UNIT – IV

7. Prepare a detailed estimate of R.C.C. Beam given in Fig. (3). 14M
(OR)
8. Prepare a detailed estimate of R.C.C. Column given in Fig. (4). 14M

UNIT-V

9. (a) Briefly explain the conditions of contract. 7M
(b) What are the types of contract? Briefly explain them. 7M
(OR)
10. (a) What are the advantages of valuation? 7M
(b) Explain the method of valuation of building. 7M

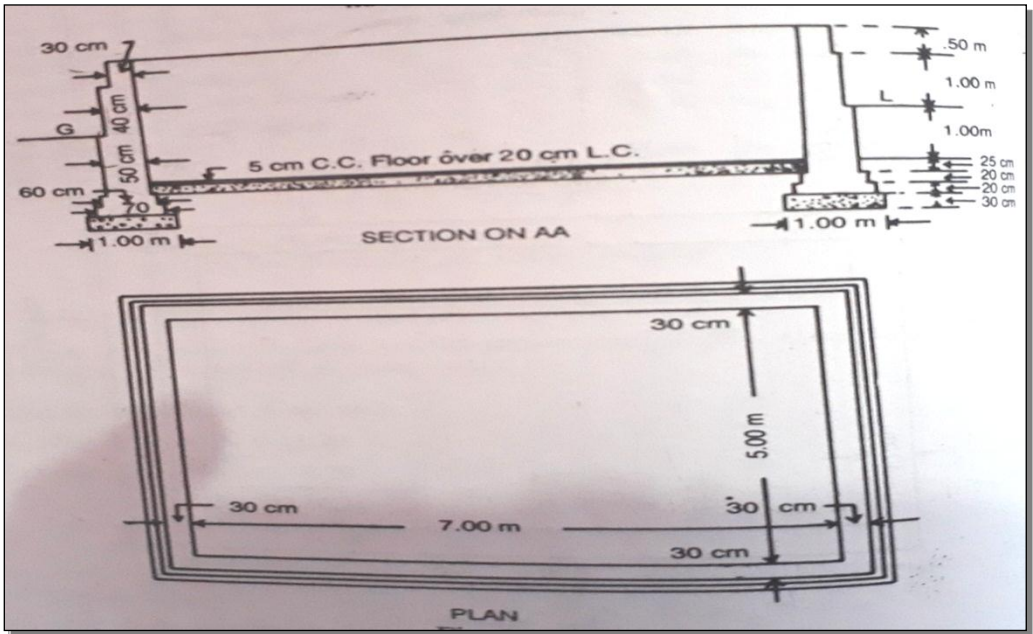


Fig. (1)

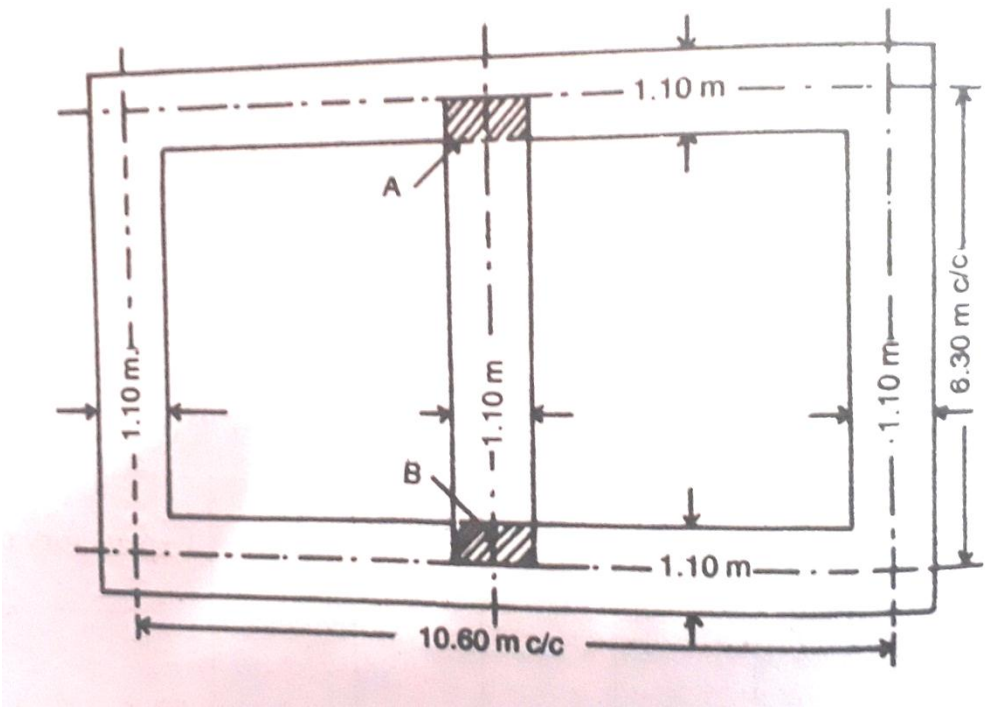


Fig. (2)

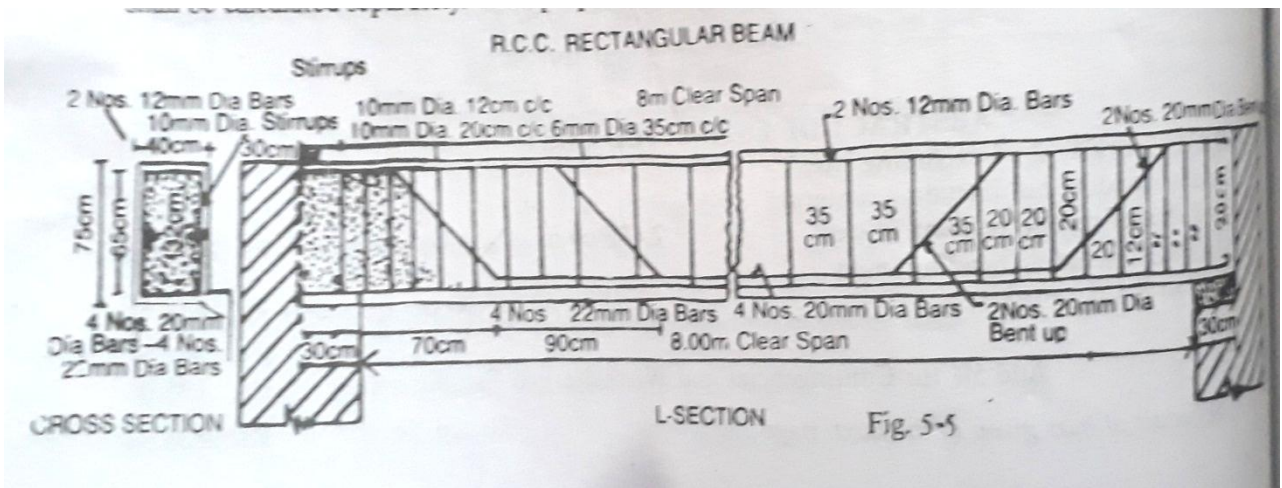


Fig. (3)

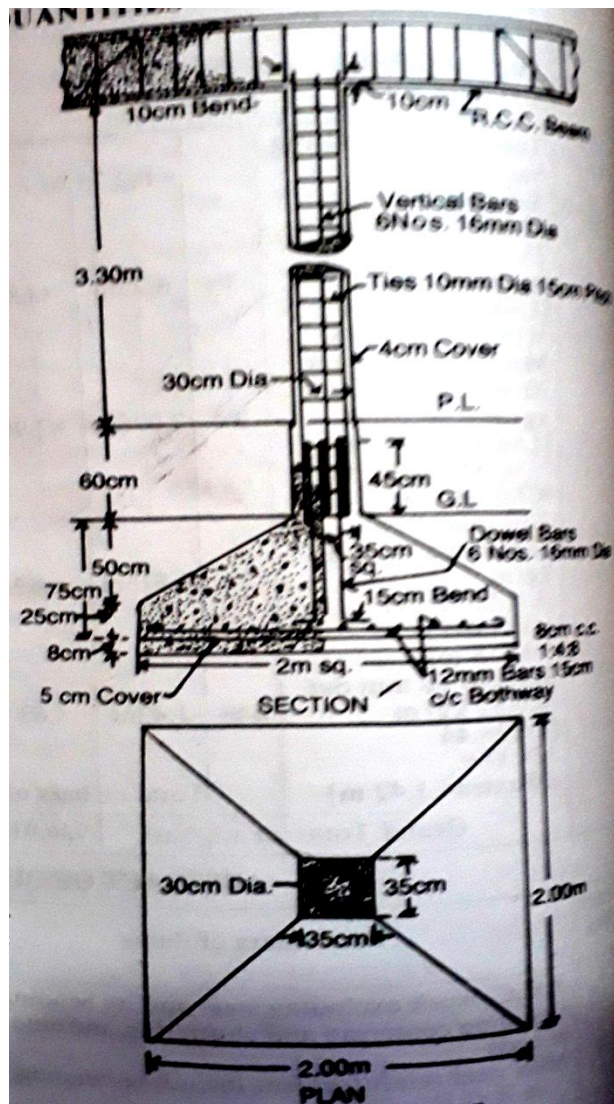


Fig. (4)

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: DESIGN & DRAWING OF IRRIGATION STRUCTURES (CE)

Time : 3 Hours

Max. Marks: 70

Note: Answer any ONE question. Assume any missing data

1. Design a sluice taking off from a tank irrigating 200 hectares at 1000 duty. The tank bund through which the sluice is taking off has a top width of 2 m with 2:1 side slopes. The top level of bank is + 40.00 and the ground level at site is + 34.50 Good hard soil for foundation is available at + 33.50.

The sill of the sluice at off take is + 34.00.

The maximum water level in tank is 38.00. The full tank level is + 37.00. Average low water level of the tank is + 35.00. The details of the canal below the sluice are as under

Bed level is + 34.00

F.S.L + 34.50

Bed width is 1.25 m

Slide slopes 1 1/2 to 1 with top of bank at + 35.50

Draw to a suitable scale the following

- (i) Longitudinal section and (ii) Half plan at top and half plan at foundation level

- 2 Design a regulator-cum- road bridge with the following data

Hydraulic Particulars	Upstream Side	Downstream side
Full Supply discharge	20 cumecs	16 cumecs
Bed width	15 meters	15meters
Bed level	+20.00	+20.00
Full supply depth (F.S.D)	2.0meters	1.75meters
Full Supply Level (F.S.L)	+22.00	+21.750
Top of bank level (T.B.L)	+23.00	+22.750

The Ground level at the site of work is + 22.00

Good soil is available for foundation at + 19.00

At Upstream, the right bank is 5 meters wide and left bank is 2m wide.

At downstream, top width of bank is the same as those on the upstream

The regulator carries a road way single lane designed for I.R..C loading class A. Provide clear free board of one meter above F.S.L for the road bridge.

Draw to a suitable scale the following

- (i) Longitudinal section and (ii) Half plan at top and half plan at foundation level

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: SANITARY ENGINEERING (CE)

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 the following terms: i) Sewage, ii) sullage, iii) Sludge 6M
 (b) The drainage area of one sector of a town is 100 hectares with a population of 50,000. The classification of surface area is as follows. 8M

Percentage of total surface area	Type of surface area	Run-off coefficient
25%	Hard Pavement	0.85
25%	Roof surface	0.80
30%	Unpaved street	0.50
20%	Gardens and lawns	0.15

If the time of concentration for the area is 15 minutes, find the maximum runoff. Estimate the design discharge for combined sewerage system.

(OR)

2. (a) Determine the size of a circular sewer for a discharge of 800 lps running half-full. Assume hydraulic gradient of 1 in 1000 and Manning's constant $n=0.012$. 7M
 (b) Discuss importance of sewer appurtenances in sewerage system and explain the manhole with neat sketch. 7M

UNIT - II

3. (a) Explain the physical characteristics of sewage. 7M
 (b) The 3 day BOD of sewage is 300 mg/lit at 27°C. Calculate the UBOD and 5 day BOD at 20°C. Assume K_D at 20°C as 0.1/day 7M

(OR)

4. (a) Explain general outline of domestic sewage treatment plant. 7M
 (b) Design a rectangular sedimentation tank to treat 10 MLD of sewage. Assume necessary data 7M

UNIT - III

5. (a) Explain the necessity of Secondary Treatment 6M
 (b) Design a conventional activated sludge treatment plant for the following data. 8M
 i) Sewage flow = 2 MLD ii) MLSS = 2500 mg/lit
 ii) Inlet BOD = 180 mg/lit iv) F/M ratio = 0.3

(OR)

6. (a) Explain with neat sketch, the working principles of oxidation pond 7M
 (b) Explain the operational problems of biological treatment process units 7M

UNIT - IV

7. (a) Mention the various methods used for removal of Nitrogen from sewage. Discuss in detail any one of these methods. 7M
 (b) Explain the self purification of natural water bodies 7M

(OR)

8. (a) Discuss in brief sludge stabilization by aerobic and anaerobic process 8M
 (b) Explain the working principle of septic tank with neat sketch. 6M

UNIT-V

9. (a) Explain the various sources and types of solid wastes 7M
 (b) Write a detailed note on sanitary landfill 7M

(OR)

10. (a) Classify various types and sources of air pollution. 7M
 (b) Explain briefly noise pollution, its cause and effects. 7M

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: Reliability Engineering & Applications to Power Systems (EEE)

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) Elucidate the rules of probability for different possible events. 7M
(b) In a certain manufacturing process one percent of the products are known to be defective. If 50 items are purchased by a customer, find the probability of getting two or less number of defectives? Use poisson distribution. 7M
- (OR)
2. (a) Discuss and deduce the expression for reliability for series and parallel networks with suitable examples. 7M
(b) A system consists of 4 components in parallel system requires that at least 3 out of 4 must function. 7M
(i) Evaluate the system reliability if each component has reliability of 0.9 and.
(ii) Compute the system reliability if 5 components are there to perform the same function?

UNIT – II

3. (a) Deduce the relation between $f(t)$, $F(t)$, $R(t)$, $h(t)$. 7M
(b) A component with an MTTF of 100 hours is known to have exponential distribution. Calculate the reliability of the component for a machine time of 10 hours. 7M
- (OR)
4. (a) Elucidate the following terms: 7M
(i) Reliability (ii) MTTF (iii) MTTR (iv) MTBF
(b) With a neat sketch explicate the various regions of Bath-Tub curve. A component has a reliability of 0.9 for a mission time of 50hrs. What is the reliability for a mission time of 100 Hrs? 7M

UNIT – III

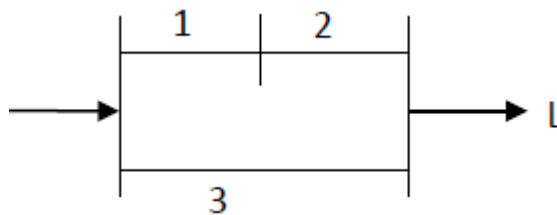
5. (a) Explicate the two state Markov process for calculation of steady state probabilities. 7M
(b) A system consists of two units of 25 MW and one unit of 50 MW. Each unit has a failure rate of 0.01 failures/day and repair rate of 0.49 repairs/day. 7M
(i) Using sequential addition method, evaluate the capacity outage cumulative probability table.
(ii) Now if the 50 MW unit is removed, find the cumulative probabilities of various remaining capacity states.
- (OR)
6. (a) For the Markov process of a two state system, evaluate the availability of each state as a function of time. 7M
(b) A generating station has three generators, two rated for 10 MW and third one rated for 20MW. The failure and repair rates of each unit are 0.35 failures/year and 9.65 repairs/year. Obtain the state diagram and mark the various equivalent transitional rates of equal capacity states combined. Hence evaluate the cumulative probability of various combined states. 7M

UNIT – IV

7. (a) Elucidate the recursive relation to be used for finding the cumulative probability when the unit is removal from the system. 7M
(b) A power system contains three 40 MW and one 60 MW capacity unit each having a forced outage rate of 0.02. The annual daily peak load variation curve is a straight line from 100% to 40% points. Estimate LOLE for a peak load of 200 MW. 7M
- (OR)
8. (a) Explicate the method of calculating LOLP of generating system. Find the inadequacies of LOLP as an index of unreliability? 7M
(b) A generating plant containing three identical 40 MW generating units, is connected to a constant 82 MW load. The unit failure and average repair times are 3 failures/year and 8 days respectively. Develop frequency, duration and probability risk indices for this system. 7M

UNIT-V

9. (a) Explicate the system and load point reliability indices with necessary expressions for the composite system reliability analysis. 7M
(b) Elucidate how reliability analysis performed for the radial networks in distribution systems. 7M
- (OR)
10. (a) Illustrate two state weather modeling in the reliability evaluation of transmission lines. 7M
(b) A data collection scheme shows that each line of a system similar to that of figure given below has a failure rate/year of normal weather of 0.25 and a failure rate/year of adverse weather of 50. Given that hours, hours, evaluate: 7M
- The average failure rate of each line.
 - The percentage of failures occurred during adverse weather.
 - The reliability indices of the load point if repair can be done during adverse weather and each line has a repair time of 8 hours.



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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: ELECTRICAL MACHINE DESIGN (EEE)

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) Derive the output equation of a three phase core type transformer. 6M
(b) A single phase 400V, 50Hz, transformer is built from stampings having relative permeability of 1000. The length of flux path is 2.5M, net core area is 25 square of Cm and the primary winding has 800turns. Calculate the maximum flux and the no load current of transformer. The iron loss at the working flux density is 2.6Watts/Kg. 8M

(OR)

2. (a) Write notes on squares, cruciform and stepped cores and discuss their design? 8M
(b) The ratio of flux in Wb to full load mmf in a 400KVA, 50HZ, single phase core type transformer is 2.4×10^{-6} . Calculate the net iron area and the window area of the transformer. Assume maximum flux density in the core is 1.3 Wb/m^2 , current density is 2.7 A/mm^2 and widow space factor 0.26. 6M

UNIT - II

3. (a) Explain the various factors that affect choice of specific electric loadings of DC machine 7M
(b) Find the main dimensions of 200Kw, 250V, 6-pole, 100 R.P.M, compound generator having a maximum gap density of 0.87 Wb/m^2 and the number of ampere conductors per meter is 31000. The pole arc to pole pitch ratio is 0.67, full load efficiency is 91% and ratio of core length to pole pitch is 0.75. 7M

(OR)

4. Derive the equation of height of cylindrical field coil of DC machine. 14M

UNIT - III

5. (a) Derive an expression for rotor bar current and end ring current. 8M
(b) A 10 Kw, three phase, 6-pole 220V, 50Hz, star connected induction motor has 54 stator slots with 9 conductors/slot. Number of rotor bars are 60. The machine has an efficiency of 0.85 and power factor is 0.84 lagging. The rotor mmf is 85% of the stator mmf. The current density in the rotor bar and the end ring is 5 A/mm^2 . Determine the current and cross section are of the rotor bar and the end ring. 6M

(OR)

6. Explain the design procedure of slip ring type rotor of induction motor. 14M

UNIT - IV

7. (a) Define short circuit ratio in connection with three phase synchronous machine. 4M
(b) Explain the procedure for the design of stator of synchronous machine 10M

(OR)

8. Determine for a 500KVA, 6600V, 50Hz, star connected three phase salient pole synchronous machine. (i) The diameter of the air gap. (ii) core length for square pole face (iii) number of stator slots. Assume specific magnetic loading is 0.6 Tesla. Specific electric loading is 30,000 AC/M. winding factor is 0.955. 14M

UNIT-V

9. Define the cooling time constant. Derive the expression for temperature fall of an electric machine in terms of cooling time constant and final temperature fall. 14M

(OR)

10. (a) The temperature rise-time curve of a transformer in which loss dissipated is constant shows that the rate of change of temperature rise is $0.375 \text{ }^{\circ}\text{C/min}$ and $0.227 \text{ }^{\circ}\text{C/min}$. When temperature rise is $29.1 \text{ }^{\circ}\text{C}$ and $36.7 \text{ }^{\circ}\text{C}$ respectively. Find the final steady temperature rise and heating time constant of transformer. 8M
(b) The full load efficiency of a 100MW hydrogen cooled turbo synchronous machine is 99%. The hydrogen enters with a temperature of $25 \text{ }^{\circ}\text{C}$ and leaves the machine at temperature of $55 \text{ }^{\circ}\text{C}$. Determine the volume of the coolant at a pressure of 1500mm above the gauge pressure. 6M

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: FLEXIBLE AC TRANSMISSION SYSTEMS (EEE)

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 need of transmission line interconnections 7M
(b) Explain the necessity of usage of FACTS technology in modern power systems 7M
(OR)
2. (a) Explain various loading capability limits in power flow systems. 7M
(b) What are FACT controllers and explain different categories of FACT controllers 7M

UNIT – II

3. (a) Explain the three phase full-wave bridge converter with necessary waveforms. 7M
(b) Explain reasons for possessing harmonics in a single phase bridge circuit and how they can be nullified. 7M
(OR)
4. (a) Explain the concept of Pulse width modulation? State advantages and disadvantages of the same. 7M
(b) Compare the performance of Current Source Inverter with Voltage Source Inverter 7M

UNIT – III

5. (a) Discuss the improvement of voltage stability using shunt compensation. 7M
(b) Explain in detail about power oscillation damping and how it can be reduced using shunt compensation 7M
(OR)
6. (a) Explain TSC – TCR type static var generator with a neat functional control Scheme. 7M
(b) Discuss briefly about switching converter type VAR generators 7M

UNIT – IV

7. (a) Explain the function of SVC and STATCOM in order to maintain regulation and slope transfer function 7M
(b) Explain about basic control scheme of a Static VAR compensator with a neat diagram 7M
(OR)
8. (a) Explain how transient stability enhancement is achieved with the help of a SVC 7M
(b) Explain implementation of functional control scheme for damping power oscillations in power system using SVC 7M

UNIT-V

9. (a) With the help of a power angle curve explain how series compensation enhances transient stability. 7M
(b) Explain GSC with a neat diagram and waveform 7M
(OR)
10. (a) Explain variable reactance model of TCSC with a neat diagram 7M
(b) Discuss briefly about the control schemes employed for TSSC 7M

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: UTILIZATION OF ELECTRICAL POWER (EEE)

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 8M
i) Illumination ii) Luminous flux iii) Luminous intensity iv) candela
(b) State and explain the laws of illumination. 6M
(OR)
2. (a) Compare the merits and demerits of filament lamp and fluorescent lamps? 6M
(b) State and explain inverse square law of Illumination. 8M

UNIT – II

3. (a) List out various types of heating and explain about resistance heating in detail. 7M
(b) Write the differences between AC and DC welding. 7M
(OR)
4. (a) What are different methods of electric heating? 6M
(b) Describe with neat sketches various methods of electric resistance welding. Give its merits and demerits with respect to arc welding. 8M

UNIT – III

5. (a) Discuss the advantages and disadvantages of electric drive over other drives. 8M
(b) State the criteria for selection of a motor. 6M
(OR)
6. (a) What is meant by load equalization and obtain the flywheel calculation for load variation conditions? 7M
(b) Explain various methods of speed control of AC motors. 7M

UNIT – IV

7. (a) Describe the systems of track electrification in detail. 7M
(b) Explain the various methods of electric braking and write their merits and limitations 7M
(OR)
8. (a) What are the requirements of good electric braking? 6M
(b) Discuss the application of rheostatic braking as applied to series and a.c induction motors with neat diagram. 8M

UNIT-V

9. (a) What is coefficient of adhesion? How does it affect the slipping of the driving wheels of the traction unit? 8M
(b) Compare Ac and DC systems of traction? 6M
(OR)
10. (a) Explain the terms free running, coasting and braking with reference to electric traction systems. 7M
(b) Explain briefly the tractive effort required while the train is moving up the gradient and down the gradient. 7M

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: BIOMEDICAL INSTRUMENTATION (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. (a) Explain about Static and Dynamic characteristics of Medical instruments? 10M
(b) Explain any two Bio-electric signals and its characteristics? 4M

(OR)

2. (a) Draw and explain the block diagram of Biomedical Instrumentation System? 10M
(b) What are the applications of Bio-potential amplifiers? 4M

UNIT – II

3. (a) What is resting potential? Explain about the generation and propagation of action potential in detail with the help of a neat sketch? 10M
(b) Explain about the Nernst equation for Bio-electric potentials? 4M

(OR)

4. (a) Discuss about the different ways of transport of ions through the cell membrane? 6M
(b) Write short notes on (i) Resting potential (ii) Action potential 8M

UNIT – III

5. (a) What is a pacemaker? Explain about internal pacemaker with a neat block diagram? 7M
(b) What is defibrillation and explain the working of defibrillator? 7M

(OR)

6. (a) Explain the operation of the heart and the cardiovascular system? 10M
(b) Draw the ECG waveform? 4M

UNIT – IV

7. (a) Explain the operation of Spirometer with the help of neat diagram? 8M
(b) Write about the Pneumotachograph ventilators? 6M

(OR)

8. (a) Explain about various standard 12-lead configurations of ECG recording with neat sketches? 10M
(b) Describe the specifications of ECG machine? 4M

UNIT-V

9. (a) Explain about the physiological effects of electric current? 10M
(b) Discuss about shock hazards from electric equipment? 4M

(OR)

10. (a) Explain about various methods of accident prevention? 10M
(b) What are the precautions to minimize electric shock hazards? 4M

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: RADAR SYSTEMS (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. (a) Derive the expression for the simple form of the radar equation 7M
(b) Explain about radar frequencies 7M

(OR)

2. (a) Briefly write about radar system, duplexer. List few advantages and applications of radar. 7M
(b) A radar operating at 10 GHZ has a maximum range of 50km with an antenna gain of 4000. If the transmitter has power of 250kw and minimum detectable signal of 10^{-11} Watts. Determine the radar cross section of the target 7M

UNIT – II

3. (a) Explain in detail about RADAR duplexers with neat sketches 7M
(b) Discuss various types of radar displays 7M

(OR)

4. (a) Three networks units, each of 6db noise figure and 10db, 6db and 3db gains respectively are cascaded. Determine the Overall noise figure of the system. 7M
(b) Explain different types of Duplexers 7M

UNIT – III

5. (a) Calculate the lowest blind speed of an MTI system operating at 4.2cm wavelength and transmitting at a pulse repetition time of 286 μ S. 7M
(b) Description of Range gate Doppler filters 7M

(OR)

6. Explain the principle of operation of MTI radar with power amplifier transmitter with neat block diagram. 14M

UNIT – IV

7. (a) Discuss about VHF-VOR 7M
(b) Compare and contrast between LF/MF four course radio ranges 7M

(OR)

8. (a) Explain about various errors in direction finding 7M
(b) Discuss the operation of DME 7M

UNIT-V

9. (a) Discuss about Decca receivers 7M
(b) Explain about Decca navigation system 7M

(OR)

10. (a) Explain about DME and write its operation in detail 7M
(b) Write about TACAN equipment 7M

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SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: SATELLITE COMMUNICATIONS (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. (a) Explain about brief history of satellite communication. 7M
(b) List the applications of satellites. 7M

(OR)

2. (a) Discuss the procedure for launches and launch vehicles for spacecrafts 7M
(b) Write notes on Orbital effects in communication systems performance 7M

UNIT – II

3. (a) Discuss in detail Attitude and orbit control system for a spacecraft 7M
(b) Explain the communication sub-system. 7M

(OR)

4. Draw the typical telemetry, tracking, command, and monitoring system and explain how it is helpful in successful operation of a communication satellite. 14M

UNIT – III

5. (a) Derive the power received from the satellite at the earth station from the basic transmission theory 7M
(b) Write short notes on design of satellite links for specified C/N. 7M

(OR)

6. (a) Derive the relation between saturation flux density and carrier to noise ratio. 7M
(b) What is Link Budget? Explain Uplink Budget of a Satellite with neat diagram? 7M

UNIT – IV

7. (a) What is the basic principle of a direct sequence spread spectrum system and explain. 7M
(b) Explain the basic principle of FDMA and write its applications. 7M

(OR)

8. (a) Draw the frame structure of TDMA and describe each field. 7M
(b) Discuss clearly the CDMA system with example. 7M

UNIT-V

9. (a) Explain about design considerations of earth station. 7M
(b) Explain about various equipments used in earth station. 7M

(OR)

10. Draw the transmitter and receiver block diagrams of an earth station and explain its Working 14M

Q.P. Code: 453412

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: CELLULAR & MOBILE COMMUNICATIONS (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. (a) Explain in detail about the operation of Cellular Systems? 10M
(b) Explain briefly about different types of cell splitting techniques? 4M
(OR)
2. (a) Explain in detail about Hand off mechanism? 7M
(b) Explain in detail about Model of transmission medium? 7M

UNIT – II

3. Explain in detail about the effect of propagation of mobile signals over water or flat open area? 14M
(OR)
4. Explain in detail about Lee Model for point to point configuration? 14M

UNIT – III

5. (a) Explain in detail about methods used to reduce co-channel interference? 8M
(b) Explain in detail about Channel Combiners? 6M
(OR)
6. Write short notes on (i) Near End-Far End Interference (ii) Effect of lowering the antenna in different cases 14M

UNIT – IV

7. Write short notes on (i) Channel Sharing (ii) Channel borrowing (iii) Comparison of Sectorized and unsectorized Omni Cells 14M
(OR)
8. Write short notes on (i) Adjacent Channel Assignment (ii) underlay-overlay arrangement 14M

UNIT-V

9. Explain in detail about TDMA Architecture, Structure, and Channels? 14M
(OR)
10. (a) Explain in detail about GSM Architecture? 9M
(b) Explain in detail about GSM Channels? 5M

Q.P. Code: 552412

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: GEOMETRIC MODELLING (ME)

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) Differentiate between interactive and passive graphics. 7M
(b) Name different graphical input and output devices. Explain working of any two input and output devices. 7M

(OR)

2. (a) Discuss midpoint circle algorithm in detail. 7M
(b) Discuss flood fill algorithm in detail. 7M

UNIT – II

3. (a) Explain working principle of line clipping in detail. 7M
(b) Explain working principle of 3D clipping in detail. 7M

(OR)

4. (a) What is the principle used for midpoint circle drawing? Illustrate with example. 7M
(b) Explain briefly Cohen-Sutherland line clipping with suitable example? 7M

UNIT – III

5. (a) Why Bezier splines are more useful for curve and surfaces design? Write the properties of Bezier curves. 7M
(b) What are the advantages of B-splines over Bezier splines? Discuss the properties of B-spline curve. 7M

(OR)

6. (a) Explain about spline representation and Hermite curve. 7M
(b) Describe about Bezier and B-spline surfaces. 7M

UNIT – IV

7. (a) Explain Viewing parameters for 3 dimensional object. 7M
(b) Give the transformation matrices for 7M
i. Translation.
ii. Rotation.
iii. Scaling in 3 dimensions.

(OR)

8. (a) Discuss briefly the 3D composite transformations. 7M
(b) Explain briefly about 3D clipping. 7M

UNIT-V

9. (a) How does scan-line coherence help to reduce computation? 7M
(b) Distinguish depth-sort and z-buffer algorithms. 7M

(OR)

10. Explain the Back face detection method for hidden surface removal with an example. 14M

Q.P. Code: 552612

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech VIII Sem (R15) Regular Examinations of April 2019
SUB: GAS TURBINES AND JET PROPULSION (ME)

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 a schematic diagram and T-S diagram of a simple gas turbine cycle with Reheating.
(b) Explain briefly the working principle of Open cycle gas turbine.

(OR)

2. (a) How the working of gas turbine differs with and without re-generator
(b) With a neat sketch explain the working of Closed cycle gas turbine.

UNIT – II

3. (a) What is meant by Jet propulsion?
(b) Write short notes on Thermal Jet engines.
4. (a) What are the applications of Thermal Jet engines
(b) What is the basis on which Jet propulsion engines are classified?

UNIT – III

5. (a) Draw the schematic diagram of Turbo prop engine
(b) What is Thrust augmentation?
6. A turbo jet engine consumes air at the rate of 50 Kg/s when flying at a speed of 1200kmph. Calculate (i) Exit velocity of the jet when enthalpy drop in the nozzle is 200 KJ/kg (ii) Fuel flow rate if A/F is 60:1 (iii) Thrust SFC (iv) Propulsive Power and (v) Propulsive efficiency.

UNIT – IV

7. (a) Describe the thermodynamic cycle of Ram Jet engine
(b) With the aid of a schematic diagram explain the working of pulse jet engine.
8. (a) Mention the various advantages and disadvantages of the pulse jet engine.
(b) What are the criteria for performance evaluation of Jet engines?

UNIT-V

9. (a) Briefly describe the two types of solid propellant rockets.
(b) What are the desirable requirements of a liquid propellant for rockets?
10. (a) What are the applications of rocket engine?
(b) Differentiate solid and liquid propellants

Q.P. Code: 552812

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: RENEWABLE ENERGY SOURCES (ME)

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 neat diagram, explain the working of sun shine recorder. 7M
(b) Write short note on solar radiation data 7M
(OR)
2. (a) Explain about beam and diffuse radiation. 4M
(b) How can we measure the diffuse radiation by using the Pyranometer? 10M

UNIT – II

3. (a) What are the various methods of solar energy storage? 4M
(b) Discuss in detail any two of the solar energy storage methods 10M
(OR)
4. (a) What are the advantages and disadvantages of focusing type collectors over flat plate collectors? 7M
(b) Enumerate different applications of solar energy. Describe a solar hot water supply system 7M

UNIT – III

5. (a) With neat sketch, explain the working of the darrieus type machines. 8M
(b) Discuss their Merits and Applications 6M
(OR)
6. (a) What is meant by anaerobic digestion? What are the factors which affect biodigestion? Explain them briefly. 8M
(b) With a neat sketch explain the working of floating drum biogas plant. 6M

UNIT – IV

7. (a) Explain with neat sketch the working of Liquid Dominated System. 10M
(b) What are the applications of geothermal energy? 4M
(OR)
8. (a) Explain single basin tidal energy plant. 7M
(b) Explain Double basin tidal energy plant. 7M

UNIT-V

9. (a) Explain with a neat sketch the working principle of MHD system 7M
(b) Draw a line diagram of the fuel cell using H₂ as fuel and O₂ as oxidizer and explain its working 7M
(OR)
10. (a) Sketch and explain Open-cycle system MHD generator. 7M
(b) Discuss their Advantages and Applications 7M

Q.P. Code: 553012

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: AUTOMATION & ROBOTICS (ME)

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 Automation and Explain safety monitoring system in an automated system 14M
(OR)
2. Explain the possible strategies in error recovery 14M

UNIT – II

3. Briefly explain various part transfer methods and mechanisms used in automation 14M
(OR)
4. Write a detailed note about flow lines with buffer storage with the applications 14M

UNIT – III

5. Explain various robot configurations with neat sketches 14M
(OR)
6. Define a robot. Briefly explain the basic components of a robot with neat sketches 14M

UNIT – IV

7. Find the transformation matrices for the following operations on the point $2i+8j+3k$
- (a) Rotate 30° about x – axis 7M
- (b) Translation by 5 units in X direction, 3 units in Y direction and 2 in Z direction 7M
(OR)

8. Explain the homogeneous transformation for a two link robot and derive the Transformation matrix 14M

UNIT-V

9. With a neat sketch explain the types of hydraulic actuators 14M
(OR)
10. Explain the various types of touch sensors with neat sketches 14M

Q.P. Code: 652812

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: DIGITAL IMAGE PROCESSING (CSE)

Time : 3 Hours

Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

UNIT - I

1. What is meant by Image Digitization? Explain various types of resolutions with the help of neat Diagram 14M

(OR)

2. Explain about the Different levels of image data representation with neat diagrams 14M

UNIT – II

3. (a) What are the main objectives of image processing? 6M

- (b) Explain any one application of Image Registration 8M

(OR)

4. Explain the different type of spatial filtering in image restoration 14M

UNIT – III

5. (a) Write a short note on color fundamentals 7M

- (b) Write about color Transformation. 7M

(OR)

6. Define the color model and explain in detail about various color models 14M

UNIT – IV

7. (a) Write a short note on Multi-Level Thresholding in image segmentation. 7M

- (b) What are the different Edge operators in Segmentation? 7M

(OR)

8. (a) Explain the method of extracting Edge Elements by Thresholding. 8M

- (b) Write a note on Edge Detector performance in Segmentation. 6M

UNIT-V

9. (a) What the different application of wavelets 8M

- (b) Define the importance of Fourier transform in image transformation. 6M

(OR)

10. (a) Write a short note on various comparison of compression methods 8M

- (b) Write a short on JPEG and MPEG image compression 6M

Q.P. Code: 653012

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: MANAGEMENT SCIENCE (CSE)

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 Management and Explain Henry Fayol's Principles of Management. 14M
(OR)
2. Explain various types of Organization in detail. 14M

UNIT - II

3. Discuss Corporate Planning mission, objectives and programmes. 14M
(OR)
4. Examine the factors promoting Plant Location. 14M

UNIT - III

5. Define Human Resource Management and explain its basic functions. 14M
(OR)
6. (a) What is the need of Inventory Control? 4M
(b) Explain various Store Records maintain by stores management. 10M

UNIT - IV

7. Explain the basic procedure involve in Method study and Work measurement. 14M
(OR)
8. Examine the significance of Control Charts in quality control. 14M

UNIT-V

9. A small project consists of seven activities for which the relevant data are given below: 14M

Activity	Preceding activities	Activity duration (Days)
A	-	4
B	-	7
C	-	6
D	A, B	5
E	A, B	7
F	C, D, E	6
G	C, D, E	5

- a) Draw the Network and find the project completion time.
b) Calculate total float for each of the activities and highlight the Critical path.
(OR)

10. Write short note on the following
- (a) PERT and CPM 7M
(b) Project Crossing 7M

Q.P. Code: 653212

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: ETHICAL HACKING (CSE)

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 in detail about importance of Security. 8M
(b) Explain about Meta Search Engines. 6M

(OR)

2. (a) Explain the security, functionality and usability triangle. 7M
(b) What is Vulnerability research? 7M

UNIT – II

3. (a) What are the various objectives of scanning? 5M
(b) Explain the following enumeration techniques. 9M
i) NTP Enumeration ii) SMTP Enumeration iii) Web Enumeration

(OR)

4. (a) Discuss in detail about Network mapping and Proxy tools 7M
(b) What are various LDAP Enumeration tools? 7M

UNIT – III

5. What are the different types of password attacks? Explain. 14M

(OR)

6. What are the countermeasures against different types of keyloggers? 14M

UNIT – IV

7. (a) Write a simple C program 4M
(b) Write in detail about the BLT of Perl. 10M

(OR)

8. (a) Explain basic object - oriented programming concepts. 7M
(b) Explain in detail about Windows File Systems, File Allocation Table, NTFS and Remote Procedure Call. 7M

UNIT-V

9. Discuss in detail about types of Penetration Testing. 14M

(OR)

10. Write short notes on following tools. 14M
a) AppScan b) HackerShield c) SAINT d) SecureScan e) WebInspect

Q.P. Code: 653412

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VIII Sem. (R15) Regular Examinations of April 2019
SUB: SOFTWARE PROJECT MANAGEMENT (CSE)

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 waterfall model? Write five necessary improvements for this approach 7M
(b) What are the key practices that improve overall software quality? 7M

(OR)

2. (a) How to estimate cost in software economics? Explain the three generations of software economics. 7M
(b) What are the important trends to improve the software economics? 7M

UNIT – II

3. (a) List the principles of modern software management 7M
(b) Discuss about engineering artifacts 7M

(OR)

4. (a) Explain the lifecycle phases of a modern software project. 7M
(b) Write short note on pragmatic artifacts 7M

UNIT – III

5. In detail write about major milestones evaluation across plans, requirements and products. 14M

(OR)

6. (a) Explain software process workflows 7M
(b) Write short notes on work breakdown structure 7M

UNIT – IV

7. (a) Explain typical automation and tool components that support the process workflows 7M
(b) What are the management indicators are available? Explain those. 7M

(OR)

8. Map the project level roles and responsibilities for the default project organizations with their teams in brief. 14M

UNIT-V

9. (a) Describe about modern process transition in detail – Culture Shifts. 7M
(b) Explain top 10 software management principles 7M

(OR)

10. (a) Describe about the priorities for tailoring the process frame work. 7M
(b) Mention the differences in the artifacts for small and large scale projects 7M