Total No. of Questions : 12]

SEAT No. :

P3733

[Total No. of Pages :3

[4759] - 501
B.E. (Mechanical Engineering)
GAS TURBINES AND JET PROPULSION
(2003 Course) (Semester - I) (402044)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer 3 questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Figures to the right indicate full marks.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Use of logarithmic tables, Mollier charts, electronic pocket calculator is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain with sketches the operation of converging-diverging nozzle under varying pressure ratios. **[10]**

b) Define the following terms: **[6]**

i) Mach Number

ii) Mach Line

iii) Mach Angle

iv) Mach Cone

OR

Q2) a) Air is flowing through a converging nozzle. At a particular point within the nozzle, the pressure P1 is 3.5 bar, temperature T1 is 556K, the velcoity V1 is 180 m/s. Consider air to be ideal gas. Find the stagnation pressure, temperature, density. **[8]**

b) Derive Rankine-Hugoniot equation $V_1 V_2 = a^{*2}$ with usual notations for normal shock. **[8]**

P.T.O.

Q3) a) Compare centrifugal and action flow compressors, in detail. **[8]**

b) A centrifugal compressor delivers $12m^3$ of free air while running at 10000 rpm. The air is compressed from 1 bar, 20ºC to 4 bar with an isentropic efficiency of 80%. Blades are radial at outlet of the impeller and the flow velocity is 60 m/s which is constant throughout. The ratio of outer and inner radii of the impellar is 2 and slip factor is 0.9. The blade area coefficient at the inlet is 0.9. **[10]**

Determine:

i) Temperature of the air discharged and

ii) Theoretical power required.

OR

Q4) Write Short Notes on: **[18]**

a) Work input factor & Work done factor for axial flow compressors.

b) Surging & Choking.

c) Materials used in compressors.

Q5) a) Find the condition for maximum efficiency of the Brayton Cycle. What do you understand by the maximum and optimum pressure ratio? **[10]**

b) Compare gas turbines with steam turbine and I.C.Engines. **[6]**

OR

Q6) Write notes on: **[16]**

a) Brayton Cycle Component Efficiencies

b) Improvements in Brayton Cycle

c) Working of Semiclosed Cycle

SECTION - II

Q7) a) Explain the terms "loading coefficient" and "flow coefficient" in gas turbines. **[6]**

b) Derive an expression for maximum utilization factor of a 50% reaction stage of a reaction turbine. **[12]**

OR

Q8) a) Explain Close cycle & open cycle gas turbines. **[6]**

b) Write a note on Energy Flow Diagram for stage of an impulse turbine. **[6]**

c) What is compounding of impulse gas turbines? Explain any one method. **[6]**

Q9) Write notes on: **[16]**

a) Use of ceramics in gas turbines

b) Blade coling of gas turbines

c) Combustion chambers in gas turbines

OR

Q10) Write notes on: **[16]**

a) Fuels used in gas turbines

b) Flame tube cooling

c) Pollution from gas turbines

d) Primary & secondary air for gas turbines

Q11) a) A jet plane having 2 jets flies at a speed of 800 km/hr at an altitude where the density of air is 0.15kg/m^3. The propulsive efficiency is 55%, the drag on the plane is 6.5KN. Calculate **[12]**

i) Diameter of jets

ii) Fuel consumption in kg/thrust kw-hour

iii) air-fuel ratio of the engines.

The overall efficiency of the plant is 16% & C.V. of fuel is 4.8MJ per kg.

b) Classify jet propulsion systems. **[4]**

OR

Q12) a) Explain the working of Ram jet and Pulse jet with a neat sketch. **[12]**

b) Write a note on Rocket Propellants. **[4]**

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Total No. of Questions : 12]

SEAT No. :

P4722

[Total No. of Pages : 3

[4759]-502

B.E. (Mechanical)

ALTERNATIVE ENERGY SOURCES

(2003 Pattern) (Elective - I)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Define with a neat sketch i) Zenith angle ii) Solar azimuth angle iii) Surface azimuth angle . **[9]**

b) What is Solar Constant? Discuss the reasons for variation in receiving solar energy on earth. **[9]**

OR

Q2) a) Discuss the need for using alternative energy sources. Comment on its advantages and limitations in the national context. **[9]**

b) Determine the local solar time and declination at a location 23°15'N, longitude 77°30'E at 12.30'IST on June 19. Equation of time correction given from standard chart is (-1'01"). **[9]**

Q3) a) Explain the working principle of FPC. Discuss the selection of materials for different components. **[8]**

b) Explain the standard testing procedure of liquid FPC and explain its performance curves. **[8]**

P.T.O.

OR

Q4) a) Discuss the spectral distribution of extra-terrestrial solar radiation graphically. What are the limitations of solar energy utilization. **[8]**

b) Explain the construction and working of Solar pyrtheliometer with the help of a neat diagram. **[8]**

Q5) a) Describe passive solar heating/cooling of residential buildings. **[8]**

b) Explain with a neat sketch any one type of solar still. **[8]**

OR

Q6) a) Sketch and explain the construction and working of forced circulation dryer. **[8]**

b) Define aperture, concentration ratio and acceptance angle for concentrating collectors, stating the significance. **[8]**

SECTION - II

Q7) a) Explain the layout and working of a solar thermal power plant. **[8]**

b) Discuss the sizing and selection of micro hydel plants. **[8]**

OR

Q8) a) Explain the mechanism of direct conversion of solar energy into electricity. Explain its merits and demerits with reference to various applications. **[8]**

b) Explain the principle of harnessing Tidal Power. State its limitations. **[8]**

Q9) a) Explain closed cycle OTEC plant. **[8]**

b) Describe any one type of Fuel Cell, stating its difference from storage battery. **[8]**

OR

Q10) a) Discuss the potential of wind power in India. Describe the important considerations before installation of a wind turbine. **[8]**

b) Write explanatory note on liquid dominated geothermal power plant. **[8]**

Q11) a) Discuss the factors affecting performance of bio-gas plant. **[8]**

b) What is a Gasifier? Explain updraft and down draft type with neat sketches. **[10]**

OR

Q12) a) Explain the required modifications in I.C. engines for using bio fuels. **[8]**

b) Discuss the significance of bio gas in rural India. **[10]**

Total No. of Questions : 12]

SEAT No. :

P4634

[Total No. of Pages : 3

[4759]-503

B.E. (E & TC)

VOICE NETWORKS

(2003 Course) (Semester - I) (404215)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer three questions from section - I and three questions from section - II.***
2) ***Attempt not more than six questions of which at least three questions must be from each section.***
3) ***Answers to the two sections should be written in separate books.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Figures to the right indicate full marks.***
6) ***Use of logarithmic tables, slide rules, Mollier charts, electronic pocket calculator and steam tables is allowed.***
7) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) Discuss the significance of redundancy in Stored Program Control Electronics switching systems. How to attain the same in various configurations in switching systems? **[6]**

b) Distinguish between single stage and multistage networks over at least four points. **[4]**

c) Explain in detail various Subscriber loop signaling systems used in Telephone switching. **[8]**

OR

Q2) a) Compare the common control and direct control. **[4]**

b) With a neat diagram explain the principles of circuit switched and packet switched network. **[8]**

c) Calculate the availability of dual processor system for a period of 10 years if its MTBF is 2400 hours and MTTR is 5 hours. **[6]**

P.T.O.

Q3) a) What is blocking probability? With the definition explain the "Erlang C" formula for the blocking probability. **[8]**

b) A call processor in an exchange requires 100 ms to service a complete call. What is BHCA rating for the processor? If the exchange is capable of carrying 800 E of traffic, what is the call completion rate? Assume an average call holding time of three minutes. **[8]**

OR

Q4) a) Explain Grade of service and Unavailability terms in details. **[8]**

b) State and explain various measurement units used s traffic engineering. **[8]**

Q5) a) Explain in detail B & D channel in ISDN. **[8]**

b) Discuss in detail the devices used in order to provide ISDN services. **[8]**

OR

Q6) a) What are the services supported by ISDN. Explain them with the help of diagram. **[8]**

b) Explain in detail architecture of ISDN and its objectives. **[8]**

SECTION - II

Q7) a) Explain in detail the data services used in GSM systems. **[8]**

b) Describe in detail different techniques in GSM to enhance spectral efficiency. **[8]**

OR

Q8) a) Differentiate between different technologies used in cellular networks. **[8]**

b) Draw the architecture of GSM network and explain its functional blocks. **[8]**

Q9) a) Write short note on Walsh codes. **[8]**

b) Explain in detail why CDMA has better security than GSM? **[8]**

OR

Q10)a) Compare IS-95 and CDMA-2000 system in detail. **[8]**

b) Describe various logical channels in CDMA with their significance. **[8]**

Q11)a) Explain the generation and detection of DTMF in detail. **[10]**

b) Discuss the Real time protocols used in VoIP. **[8]**

OR

Q12)a) Explain the MEGACO/H.248 Protocol. **[8]**

b) What is VoIP? Explain any two applications of VoIP in detail. **[10]**

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Total No. of Questions : 12]

SEAT No. :

P4592

[Total No. of Pages :4

[4759] - 504
B.E. (E&TC)
OPTICAL AND MICROWAVE COMMUNICATION
(2003 Course) (Semester-II)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer 3 questions from Section-I and 3 questions from Section-II.***
2) ***Answer to the two Sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to tje right indicate full marks.***
5) ***Assume suitable data , if necessary.***

SECTION-I

Q1) a) The sensitivity of a photo diode is 0.65A/W and its saturation power is 2 m W. Calculate the photocurrent if the received power is i)1m W ii)2 m W iii) 3mW.Also calculate How many photons per second emanate from a laser diode radiating at 1300 nm if its power is 1mW. **[9]**

b) i) Explain the construction& working of APD with the help of neat diagram. **[6]**

ii) What are the advantages and the drawbacks of fiber optic communications and satellite communications? **[3]**

OR

Q2) a) i) Draw the structure of PIN photodiode & explain its operation in brief. Plot the responsivity curve as a function of wavelength for PIN constructed of silicon. **[6]**

ii) The sensitivity of a photo diode is 0.65 A/W and its saturation power is 2 m W. Calculate the photocurrent if the received power is 1) 1m W 2) 2m W 3) 3m W **[3]**

b) i) What are the advantages of semiconductor injection laser over other semiconductor sources that may used for optical communications?**[6]**

ii) A single mode fiber has following parameters: numerical aperture is 0.125and relative refractive index is 0.36%. Calculate the refractive index of the core. **[3]**

P.T.O.

Q3) a) List three major causes of attenuation in an optical fiber and explain their mechanisms. **[8]**

b) Compare MMSIF,SMSIF,MMGIF with reference to the pulse broadening due to internal dispersion. Also comments on the bandwidth length for these three fibers. **[8]**

OR

Q4) a) Explain bending losses in optical fiber. **[8]**

b) Compute the pulse spread caused by chromatic dispersion if a fiber has a zero-dispersion wavelength at 1312 nm, a zero-dispersion slope of 0.090 ps/nm^2.km, a length of 100km, and operates at 1310 nm.The laser diodes spectral width is 1 nm. **[8]**

Q5) a) Explain Operating principle of WDM. **[8]**

b) A fiber link includes five splices at 0.02 dB/splice , four connectors at 0.2 dB/connector,transmitter power of -10 dBm, and receiver sensitivity of -30 dBm. Perform power budget analysis and compute the length of the link that would be allowed if a single mode fiber cable with attenuation of 0.3 dB/km is sued and the required power margin is 3 dB? **[8]**

OR

Q6) a) State and explain the system requirements in detail for point-to-point optical fiber links. **[8]**

b) State the principle of operation of semiconductor optical amplifier (SOA). Compare SOA performance with doped fiber amplifiers. **[8]**

SECTION-II

Q7) a) Explain the working of ferrite isolator with a neat diagram. **[6]**

b) Differentiate between TM & TE mode in rectangular waveguide. **[6]**

c) Draw a neat diagram of a co-axial to waveguide transition and explain its principle of working. **[6]**

OR

Q8) a) Explain directional coupler. Define: **[6]**

i) Coupling coefficient

ii) Directivity

iii) Isolation loss

b) Write the S-matrix of an N-port network and state how to determine a specific element S_{ij} of the [S] matrix. **[6]**

c) Define scattering matrix & state its properties for a reciprocal & lossless network. **[6]**

Q9) a) Explain the working principle of reflex klystron.State its applications**.[8]**

b) The parameters of two cavity klystron amplifier are V_o is 1500V, I_o is 50mA, F is 10GHz,Gap spacing in each cavity (d) is 2mm, spacing between Two cavities(L) is 4cm and effective shunt resistance if each cavity is 40kΩ.

i) Find input microwave voltage in order to generate maximum output voltage.

ii) Determine the voltage gain.

iii) Calculate the efficiency of the amplifier. **[8]**

OR

Q10) a) Explain the principle of working of operation,VI characteristics and equivalent circuit of microwave tunnel diode. **[8]**

b) How is bunching achieved in cavity magnetron? Explain the phase focusing effect. **[8]**

Q11) a) Compare klystron and TWT. A helical TWT has diameter of 2 mm with 50 turns per cm.

Calculate:

i) Axial phase velocity

ii) The anode voltage at which the TWT can be operated for useful gain. **[8]**

b) What is varactor diode? Give its construction,working principle and explain its application. **[8]**

OR

Q12) a) Explain with the help of block diagram the working of wireless microwave link for long distance communication. **[8]**

b) List various operating modes of Gunn diode. Find the natural frequency and critical voltage for a GaAs Gunn diode which has an active region length of 10 μ m.If the electron drift velocity and the critical electric field is 10^5 m/s and 3 kV/cm. **[8]**

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Total No. of Questions : 12]

SEAT No. :

P3734

[Total No. of Pages :3

[4759] - 505
B.E. (E & TC)
SYSTEM PROGRAMMING AND OPERATING SYSTEM
(2003 Course) (Semester - II) (Elective - II)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section -I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section -II.***
2) ***Answers to the two sections should be written in separate answer book.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicates full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Enlist and explain the phases of Compiler in brief. **[10]**

b) Explain different development tools of language processing activities. **[8]**

OR

Q2) a) Explain the following terms: **[8]**

i) System Programming

ii) Operating System

iii) Linker and Loader

iv) Assemblers

b) What is Compiler? What are the features of Compiler and explain how compiler works? **[10]**

Q3) a) Define MACRO? Explain all the features provided by MACRO Facility. **[8]**

b) Explain the data structures used in pass-I and Pass-II of an Assembler. **[8]**

OR

P.T.O.

Q4) a) What is forward referencing? Explain how forward referencing is handled in single pass assembler? **[8]**

b) Explain how the MACRO call can be handled inside the MACRO definition? **[8]**

Q5) a) What is the function of loader and linker in operating system? Explain Direct Linking Loader. **[8]**

b) What is Program relocation? Explain reloadable code with suitable example and data structure. **[8]**

OR

Q6) a) What are the basic functions of the loader? Explain data structures used for design of loaders. **[8]**

b) Explain the working of the Dynamic Linking Loader. **[8]**

SECTION - II

Q7) a) What are the different functions of OS? Explain different types of OS. **[8]**

b) What is process? Explain how semaphore is used for process synchronization. **[8]**

OR

Q8) a) Explain Banker's algorithm. How does deadlock detection take place? **[8]**

b) Compare FCFS, Round robin, Shortest job first (Preemptive), Shortest job first (Non preemptive) on the basis of following characteristics: **[8]**

i) Selection Function

ii) Decision Mode

iii) Response time

iv) Effect on processes

Q9) a) Describe how address translation takes place with the help of neat diagrams in: **[8]**

i) Paging

ii) Segmentation

b) Differentiate the contiguous and non-contiguous memory allocation. **[4]**

c) Explain in short the following terms: **[6]**

i) Compaction

ii) Thrashing

OR

Q10)a) What are different file operations and how the file is protected? **[8]**

b) Explain three file allocation methods. **[6]**

c) Explain virtual memory using paging. **[4]**

Q11)a) Based on what criterion I/O devices are classified? How I/O time of record is calculated? Explain Magnetic Tape and Magnetic Disk in short. **[8]**

b) Explain mechanism and policies in file system and IOCS layers. Explain steps involved in I/O Operations. **[8]**

OR

Q12)Write short note on: **[16]**

a) IOCS Layers

b) I/O Devices

c) Driver for parallel port

d) Advanced I/O Programming

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Total No. of Questions : 12]

SEAT No. :

P4635

[Total No. of Pages :4

[4759] - 506
B.E. (Civil)
FOUNDATION ENGINEERING
(2003 Course) (Semester-II)(Theory)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer 3 questions from Section-I and 3 questions from Section-II.***
2) ***Answers to the two Sections must be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data ,if necessary.***

SECTION-I

Q1) a) Explain why density index is a significant parameter in foundation Engineering. **[4]**

b) How is the number and depth of exploratory holes determined? **[5]**

c) What are penetration methods of investigations? Are they reliable in all soils? **[5]**

d) What are the factors that influence SPT data? **[4]**

OR

Q2) a) What are the objectives of soil investigation? **[6]**

b) State various types of soil samplers. What is area ratio? State its significance. **[6]**

c) What is meant by geophysical methods of soil exploration? Explain anyone of them with neat sketch. **[6]**

P.T.O.

Q3) a) Distinguish between elastic settlement and consolidation settlement and explain how they are estimated? **[6]**

b) What is "active zone" in soil? Explain it with reference to the pressure bulb concept? **[6]**

c) Define preconsolidation pressure & explain how it is determined. **[4]**

OR

Q4) a) With a neat sketch explain laboratory consolidation test and list the various consolidation parameters of soil obtained from test data. **[8]**

b) Explain,with neat sketch,square root of time fitting method to find coefficient of consolidation. **[4]**

c) Define the terms normal consolidation,over consolidation & under consolidation pressure in detail. **[4]**

Q5) a) What are the basic characteristics of failure mechanisms in general shear and local shear failure.Explain with neat sketch. **[6]**

b) Explain how water table and depth influence bearing capacity. **[5]**

c) Explain the concept of floating foundation with a neat sketch. **[5]**

OR

Q6) a) Describe a plate load test as carried out in the field with a neat sketch of experimental Set up. **[6]**

b) Explain how SPT test data is used to find bearing capacity of cohesion less soil. **[5]**

c) Explain the concept of floating foundation with a neat sketch. **[5]**

SECTION-II

Q7) a) Explain in detail with sketches fivefold classification of piles foundation.**[6]**

b) Explain with a sketch the concept of negative skin friction & state how you would determine the same in non-cohesive soil. **[6]**

c) A group of 16 piles of 50 cm diameter is arranged with a center to center spacing of 1.0m. the piles are 9m long & are embedded in soft clay with cohesion 30 kN/m^2.Bearing resistance may be neglected for the piles,Adhesion factor is 0.6.Determine the ultimate load capacity of the pile group. **[6]**

OR

Q8) a) What is caisson disease ? Mention what precautions should be taken to avoid caisson disease. **[6]**

b) Explain with sketches the following difficulties met during sinking of well. **[6]**

i) Sand blow

ii) Rectification of tilt.

c) Enlist five important component parts of open caisson & explain with sketches design considerations involved in them. **[6]**

Q9) a) Compare in tabular form cantilever & anchored sheet piles on five different points. **[5]**

b) Draw in cross-section of braced excavation indicating component parts.State forces & design principles involved. **[5]**

c) Derive an expression for depth of embedment of cantilever pile by making simplified assumptions. **[6]**

OR

Q10) a) With reference to Black cotton soil explain: **[6]**

i) Free swell index.

ii) Differential free swell index.

iii) Swelling potential.

b) Explain the construction procedure for under-reamed piles. **[6]**

c) Enlist typical characteristics of Black cotton soils & give their approximate values. **[4]**

Q11) Write detailed notes on any four of following with sketches. **[4×4]**

a) Liquefaction.

b) Factors affecting ground motion.

c) Types of Earthquake.

d) Geotextile in drains.

e) Requirements reinforced soil mechanism.

OR

Q12) Write detailed notes on any four of following with sketches if required. **[4×4]**

a) Hazards of mitigation.

b) Seismic waves.

c) Types of Geosynthetics.

d) Geotextiles in foundations.

e) Geotextiles in embankment.

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Total No. of Questions : 12]

SEAT No. :

P3735

[Total No. of Pages :3

[4759] - 507
B.E. (Production)
MATERIALS AND FINANCIAL MANAGEMENT
(2003 Course) (Semester - II) (411087)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn whenever encessary.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain the importance of materials management function from Return on Investment point of view. State its objectives. **[8]**

b) Explain the following methods of selective inventory control. **[8]**

i) A-B-C Analysis

ii) V-E-D Analysis

OR

Q2) a) Derive equation for an economic order quantity (EOQ) when replenishment is Instantaneous. **[8]**

b) Explain Two-Bin system. Explain the importance of Safety Stock in case of uncertainty in demand and lead time Illustrate. **[8]**

Q3) a) Explain SCM. Explain different drivers in Supply chain Management. **[8]**

b) Explain Echeloned and direct structured logistic system. **[8]**

OR

P.T.O.

Q4) a) Explain the importance of Transportation in logistic management. What are the different modes of transportation? Explain any two in brief. **[8]**

b) Explain following terms of warehouse management. **[8]**

i) Consolidations

ii) Cross Docking

iii) Break Bulk

iv) Stock Pilling

Q5) a) Explain in brief the importance of Value Analysis in Purchasing. **[9]**

b) Explain Import Cycle with flow chart. **[9]**

OR

Q6) a) Explain Purchasing procedure in detail. Enlist various documents required for Importing. **[9]**

b) Explain mechanical and thermal system to disposal off the waste. **[9]**

SECTION - II

Q7) a) Define working capital. Why it is required? Explain various sources of finance. **[8]**

b) What is importance of Ratio Analysis? Explain the importance of following ratios. **[8]**

i) Quick Ratio

ii) Inventory Turnover Ratio

iii) Debt-Equity Ratio

OR

Q8) a) Distinguish between 'Profit maximization' and 'Wealth maximization' objectives of the firm. **[8]**

b) Explain functions of finance management. Explain the difference between finance and accounting relating to the treatment of funds and decision making. **[8]**

Q9) a) What is labour turnover? Explain various methods to measure labour turnover. What are the causes and costs associated with labour turnover? **[8]**

b) Define depreciation. Explain any two methods of depreciation. **[8]**

OR

Q10)a) What are the requirements of good wage payment system? State to what extent Halsey and Rowan plans fulfils the above requirements. **[8]**

b) Explain the methods of material costing? Explain any two methods with applications of it. **[8]**

Q11)a) Define Marginal Costing. State the applications and limitations of Marginal Costing. **[6]**

b) Define overheads and explain Primary apportionment and Secondary apportionment. **[12]**

OR

Q12)a) Define and explain the concept of standard cost and standard costing. **[6]**

b) Explain different factors to be considered in capital budgeting. Briefly explain the following. **[12]**

i) Payback Period

ii) IRR

iii) Net Present Value

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Total No. of Questions : 12]

SEAT No. :

P3736

[Total No. of Pages :3

[4759] - 508
B.E. (I.T.)
SYSTEM OPERATIONS AND MAINTENANCE
(2003 Course) (Semester - II) (Theory)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams mustbe drawn whenever necessary.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) List the strategic benefits of advanced support system. **[8]**

b) Explain service delivery cycle with a neat diagram and briefly discuss industrial issues involved in service delivery cycle with application. **[10]**

OR

Q2) a) List the key function of following support process. **[10]**

i) Customer care and billing process

ii) Order processing and provisioning process.

b) With a suitable diagram explain principal business process and their key functions. **[8]**

Q3) a) Discuss the typical services, applications and benefits of voice over IP. **[8]**

b) Discuss differentiation of market segments. **[8]**

OR

Q4) a) Explain multiprotocol label switching with a operational example. **[8]**

b) Explain the concept of 'Local number portability'. **[8]**

P.T.O.

Q5) a) Explain the different functions of sales process with suitable block diagram. **[8]**

b) What is IP billing? What are the different problems and solutions in internet billing. **[8]**

OR

Q6) a) Explain the customer care concept. **[8]**

b) What is micro payment? Explain with generic architecture. **[8]**

SECTION - II

Q7) a) What is ISDN? Explain. **[10]**

b) Compare and contrast X.25 usage. **[8]**

OR

Q8) a) Define service provisioning process. Explain the different types of implementing the same. **[10]**

b) What is the significance of periodic security audit for telecommunication service provider. **[8]**

Q9) a) Explain complete framework for support system. **[8]**

b) List the goals of telecommunications service providers with middleware. **[8]**

OR

Q10)a) Explain issues related to network operational management. **[8]**

b) Write note on ‘‘customer service order processing’’ in telecoms. **[8]**

Q11)a) Write a job profile of typical network operation manager. **[8]**

b) List the importance of documentation and management tools in customer care and billing process.

Comment on the same using B2B or B2C application. **[8]**

OR

Q12)a) What is SLA? List some service dependent and service independent metrics for the same. **[8]**

b) Explain the issues related to building team, job profile and job responsibility. **[8]**

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Total No. of Questions : 12]

SEAT No. :

P3737

[Total No. of Pages :2

[4759] - 509

B.E. (Computer Engineering)

SOFTWARE TESTING AND QUALITY ASSURANCE

(2003 Course) (Semester -II) (Elective - II) (410450)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer - book.***
2) ***From section I answer (Q1 or Q2) and (Q3 or Q4) and (Q5 or Q6).***
3) ***From section II answer (Q7 or Q8) and (Q9 or Q10) and (Q11 or Q12).***
4) ***Figures to the right side indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain representation theory of Measurement. **[10]**

b) Explain Objectives of software Measurement. **[8]**

OR

Q2) a) Explain CMM levels in details. **[8]**

b) Explain how to apply the frame work in software quality measurement. **[10]**

Q3) a) Write a note on following **[8]**

i) Functionality

ii) Complexity

b) Explain Modularity and Information flow attributes. **[8]**

OR

Q4) a) Explain what is good data, how to store and Extract data. **[8]**

b) Explain Object oriented Metrics. **[8]**

P.T.O.

Q5) a) Explain Incremental testing strategy. **[10]**

b) Enlist difference between Black box and White box testing. **[6]**

OR

Q6) a) What is defect, Defect classes and Defect Repository. **[6]**

b) What Goal-Question -Metric Model. **[10]**

SECTION - II

Q7) Write shrot note on **[18]**

a) Usability Testing

b) Ad-hoc Testing

c) Regression Testing

OR

Q8) Write short note on **[18]**

a) Execution and Reporting

b) Specification Based Testing

c) Performance testing

Q9) a) Write in details about Ishikawa's Basic tools. **[8]**

b) Define Quality, Quality control and assurance and cost of quality. **[8]**

OR

Q10)a) Explain effects of ISO quality model on software quality. **[8]**

b) Explain software Audit and its significance. **[8]**

Q11)a) Explain role of support Analysis. **[8]**

b) Explain Challenges and best practices in Problem reporting. **[8]**

OR

Q12)a) Explain Logistic and Tooling in Problem reporting. **[7]**

b) Explain problem Resolution. **[9]**

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Total No. of Questions : 12]

SEAT No. :

P3679

[Total No. of Pages :3

[4758] - 905
T.E. (E & TC)
INFORMATION THEORY AND CODING TECHNIQUES
(2003 Course) (304192) (Semester -II)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Ans Two sections in separate Books.***
2) ***Solve Q.1 or Q.2, Q.3 or Q.4 and Q.5 or Q.6 from Section -I and solve Q.7 or Q.8, Q.9 or Q.10, and Q.11 or Q.12 from Section -II.***
3) ***Figures to the right indicates full marks.***
4) ***Assume suitable data, if required.***

SECTION - I

Q1) a) A zero memory source emits six messages with probabilities of {0.20, 0.35, 0.16,0.15,0.12, 0.02} find code sequence for Huffman code, entropy of sources, average code word length, efficiency and redundancy. **[9]**

b) Draw channel Diagram and determine the probabilities associated with equiprobable inputs Also find the mutual information if the channel matrix is P[Y/X] = [0.9, 0.1: 0.2, 0.8]. **[9]**

OR

Q2) a) Determine the Lampel ziv code for the following bit stream 0100111110010100000101010110011. Recover the original sequence from the encoded stream. **[9]**

b) State and explain all shannons theorem with respect to Information theory. **[9]**

Q3) a) Explain with block diagram steps in Data compression. **[8]**

b) Explain M-ary PSK & M-ary FSK system with reference to Shannon's limit. **[8]**

OR

P.T.O.

Q4) a) Explain any two properties of mutual information and Show that Shannon's limit for AWGN Channel is -1.6dB. **[8]**

b) Explain the rate distortion Theory and Sphere tracking problem. **[8]**

Q5) a) Find the generator polynomial g(x) for a systematic (7,4) cyclic code and find code words for the following data vectors: 1011, 1110 and 1111, 1010. Given that $x^7 + 1 = (x + 1)(X^3 + x + 1)(X^3 + x^2 + 1)$. **[8]**

b) Explain Features of Golay code and comment on error detection probability of CRC code. **[8]**

OR

Q6) a) Obtain the code words for the (6,3) LBC which has the generator matrix of G - [1 1 0 1 0 0 : 0 1 1 0 1 0 : 1 0 1 0 0 1], If code word C = 1 0 1 1 1 0 is transmitted and received code word is r = 0 0 1 1 1 0 obtain the correct code word by use of syndrome polynomial. **[8]**

b) What is mean by burst? How burst error correction takes place? Explain with example. **[8]**

SECTION - II

Q7) a) For the Convolution encoder shown in figure below, sketch the state diagram and Trellis diagram. Find the output data sequence for the input data sequence 10111. **[8]**

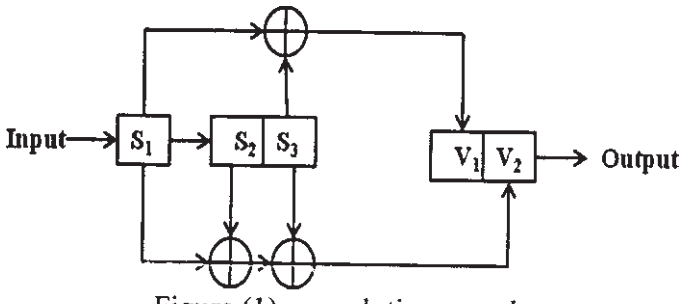

Figure (1) convolution encoder

b) What are turbo codes, Explain the necessity of interleaver in turbo codes. **[8]**

OR

Q8) a) Compare the performance of Binary systematic channel and Binary AWGN channel with respect to Asymptotic coding gain. **[8]**

b) Find the output data sequence of viterbi algorithm to decode the encoded sequence 11,01,01,00,01. The convolution encoder used have the outputs as g1(111) and g2 = 101. **[8]**

Q9) a) Design BCH code with block length n = 15 & error correcting capability tc = 1,2,3. **[9]**

b) What are data encryption Standards Discuss about systematic and A-systematic Cryptography. **[9]**

OR

Q10)a) Find minimal polynomial of $GF(2^3)$ whose trans field if GF(2) with the primitive polynomial $x^3+ x+1$. **[9]**

b) Discuss in detail about RSA algorithm. Encode the word 'CODE' using the kay generated by two prime numbers 5 and 11. **[9]**

Q11)a) Draw and explain the block diagram of space diversity technique. Enlist different Types. **[8]**

b) Compare TDMA, CDMA, FDMA and SDMA wireless Techniques. **[8]**

OR

Q12)a) Explain various Keplers law with respect to satellite communications. **[8]**

b) Explain the following terms related to mobile communications. **[8]**

i) Frequency reuse,

ii) Hand-off

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