**Birla Institute of Technology & Science, Pilani**

**Work-Integrated Learning Programmes Division**

**First Semester 2015-2016**

**Comprehensive Examination**

**(EC-3 Regular)**

Course No. : SS ZG661 (B)

Course Title : SOFTWARE QUALITY MANAGEMENT

Nature of Exam : Open Book

Weightage : 50%

No. of Pages = 2

# No. of Questions = 5

Duration : 3 Hours

Date of Exam : 08/11/2015 (AN)

Note:

1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2. All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.
4. Limited Answering Space: Do note that your answers for any question must be confined to TWO A4 pages (2 A4-sides full-spread starting from LEFT->RIGHT); All answers must start from fresh page on the LEFT Side; however, you are free to use last pages (of your answer-book marked ‘Rough work’ for planning/thinking before penning the short and precise answer in the controlled space.
5. Do NOT use long paragraphs for your answers: use short paragraphs (not more than 2 – 3 sentences each) or simple bullet-points; use relevant diagrams/sketches for illustration.
6. **Construct FIVE meaningful statements (related to SQM) by connecting ANY THREE words from the below set:** (Example: *“ISO 9001 is a model for organization’s QMS.”* (This statement is discounted from your answers; words used once in one answer-statement should not be repeated in another; only ‘non-nonsense’ answers demonstrating your knowledge of SQM will be considered as valid answers; and judgement of the evaluator is final and non- negotiable) [5 X 2 = 10]

*{ QMS, Kaizan, QC, Continuous Improvement Council, Innovation, Productivity, Design Review, Structured Methodology, TQM, Selenium, Efficiency, Pareto Analysis, Control-chart, Defect-free, Bug, Failure, QA, Process Reengineering, Fagan Inspection, Customer-complaints, Fault, Boundary Testing, Systems Analysis, Flow-chart, , Pareto Analysis, 7QC Tools, DFSS, Structural Testing, TRIZ, Functional Testing, Fish-Bone Diagram, CMMI-Level-5, DMAIC, White-Box Testing, ISO 9001, QEdge, UBST, Clean Room Technologies,* *Organization}*

1. **Identify the commonality (by theme, functional group, application, category, etc...) and the ‘odd word’ (if any) among the following set of words and explain your reasoning in brief** (in 1-2 sentences): [5 x 2 = 10]
2. Reliability, Zero-defect, Portability, Ease-of-use, Value-for-money
3. Test-driven development, Requirements volatility, Peer-reviews, Daily meetings
4. Path Testing, Data Flow Testing, McCabe Complexity, FSM States
5. Process, Flow-chart, Manufacturing, Programming, Assembly-line
6. Designer, Architect, Systems Analyst, Methods Engineer, Technician

[*Example Q: “Operational Profiles, UBST, Product Design, FSM Analysis”; A: “All these testing strategies focus on studying end-user experience/usage pattern”*]

***SS ZG661 (EC-3 Regular) First Semester 2015-2016 Page 2***

1. Can Six-Sigma methodology be applied to improve the commuting times of employees in the traffic-congested Bangalore (or any metro city)? If so, (a) define the steps (process, goals and measures) involved in the methodology as applied to this problem, (b) identify the right Six-Sigma framework and (c) illustrate computation of the current ‘sigma level’. (Make your own assumptions) [3 + 3 + 4 = 10]
2. When do we use Boundary Value Analysis and what are its limitations? Can it be used for Output Boundary value Analysis if classified under White-box testing, justify your answer? [5]
3. A program validates a numeric field as follows: values less than 10 are rejected; values between 10 and 21 are accepted; values greater than or equal to 22 are rejected. State the equivalence classes you have identified. What will be test cases for each of the class? [5]
   1. You are developing an ecommerce platform to stay ahead of the competition and you wish to include all the current functionalities of today’s shopping sites and more. As a Quality Engineer, you are required to devise QA strategies and identify testing techniques for ‘defect-free’ launch of the site during the coming Deevali festival.
4. What is your testing strategy if you are pressed for time
5. List five types of testing you recommend with valid reasoning
6. Illustrate test scenarios for each type [3 + 3 + 4 = 10]

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